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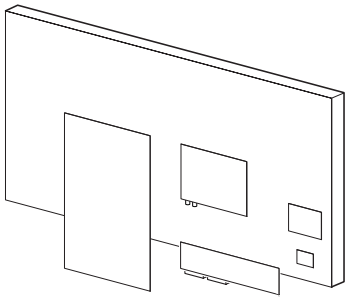

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Service Manual

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PHILIPS

1. Technical Specifications, Connections, and Chassis Overview

Index of this chapter:
1. Technical Specifications
2. Connections
3. Chassis Overview

Note: Figures below can deviate slightly from the actual situation, due to the different set executions.

1.1 Technical Specifications

1.1.1 Vision

Display type	:	LCD, S-IPS
	:	16:9
Screen size	:	17 inch (44 cm)
	:	23 inch (59 cm)
	:	26 inch (66 cm)
Resolution (HxV)	:	1280(*3)x768 pixels
	:	WXGA
Contrast ratio	:	400:1
Light output	:	450 cd/m^2
Viewing angle (HxV)	:	176x176 deg.
Tuning system	:	PLL
Colour systems	:	PAL B/G, D/K, I
	:	SECAM B/G, D/K, L, L1
Video playback	:	NTSC 4.43
	:	NTSC 3.58
	:	NTSC Play Back
	:	PAL 60
	:	PAL B/G Play Back
	:	SECAM Play Back
Channel selections	:	100 presets
	:	UVSH
Aerial input	:	75 ohm, IEC-type
Antenna	:	75 ohm, FM
Dimensions (WxHxD) in mm	:	17 inch: 578x375x240
	:	23 inch: 690x433x240
	:	26 inch: 788x504x270

1.1.2 Sound

Sound systems	:	FM/FM (5.5-5.74)
	:	BI NICAM BG - 2CS BG
	:	NICAM B/G (5.5-5.85)
	:	NICAM D/K (6.5-5.85) (Hung)
	:	NICAM I (6.0-6.52)
	:	NICAM L (6.5(AM)-5.85)
Maximum power	:	17 inch: 2 x 3 W_rms
	:	23 inch: 2 x 5 W_rms
	:	26 inch: 2 x 5 W_rms

1.1.3 Miscellaneous

Power supply:		
Mains voltage	:	95 - 240 V_ac
Mains frequency	:	50 / 60 Hz
Ambient conditions:		
- Temperature range	:	+5 to +40 deg. C
- Maximum humidity	:	90 % R.H.
Power consumption		
- Normal operation	:	17 inch: 55 W
	:	23 inch: 96 W
	:	26 inch: 110 W
- Standby	:	< 3 W

1.2 Connections

1.2.1 Rear Connections

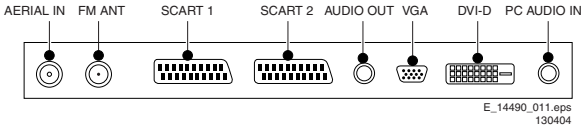

Figure 1-1 Rear connections

Aerial - In
- IEC-type Coax, 75 ohm

FM Ant
- IEC-type Coax, 75 ohm

External 1: RGB/YUV - In and CVBS - In/Out

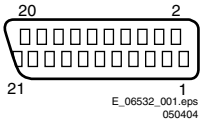

Figure 1-2 SCART connector

1	- Audio - R	0.5 V_rms / 1 kohm	⊖→
2	- Audio - R	0.5 V_rms / 10 kohm	⊖
3	- Audio - L	0.5 V_rms / 1 kohm	⊖→
4	- Audio - gnd	Ground	⏚
5	- Blue - gnd	Ground	⏚
6	- Audio - L	0.5 V_rms / 10 kohm	⊖
7	- Blue/U - in	0.7 V_pp / 75 ohm	⊖
8	- CVBS - status	0 - 2 V: INT 4.5 - 7 V: EXT 16:9 9.5 - 12 V: EXT 4:3	
9	- Green - gnd	Ground	⏚
10	- n.c.		
11	- Green/Y - in	0.7 V_pp / 75 ohm	⊖
12	- n.c.		
13	- Red - gnd	Ground	⏚
14	- FBL - gnd	Ground	⏚
15	- Red/V - in	0.7 V_pp / 75 ohm	⊖
16	- Status/FBL	0 - 0.4 V: INT 1 - 3 V: EXT / 75 ohm	⊖
17	- Video	Ground	⏚
18	- Video	Ground	⏚
19	- CVBS - out	1 V_pp / 75 ohm	⊖→
20	- CVBS - in	1 V_pp / 75 ohm	⊖
21	- Shielding	Ground	⏚

External 2: RGB/YUV - In and CVBS - In/Out

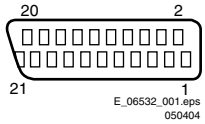

Figure 1-3 SCART connector

1	- Audio - R	0.5 V_rms / 1 kohm	⊖→
2	- Audio - R	0.5 V_rms / 10 kohm	⊖
3	- Audio - L	0.5 V_rms / 1 kohm	⊖→
4	- Audio - gnd	Ground	⏚
5	- Blue - gnd	Ground	⏚
6	- Audio - L	0.5 V_rms / 10 kohm	⊖
7	- n.c.		⊖
8	- CVBS - status	0 - 2 V: INT 4.5 - 7 V: EXT 16:9 9.5 - 12 V: EXT 4:3	
9	- Green - gnd	Ground	⏚
10	- n.c.		
11	- n.c.		⊖
12	- n.c.		
13	- Red - gnd	Ground	⏚
14	- FBL - gnd	Ground	⏚
15	- C - in	0.3 V_pp / 75 ohm	⊖
16	- n.c.		⊖
17	- Video	Ground	⏚
18	- Video	Ground	⏚
19	- CVBS - out	1 V_pp / 75 ohm	⊖→
20	- CVBS/Y - in	1 V_pp / 75 ohm	⊖
21	- Shielding	Ground	⏚

Audio - out

3	- Audio - R	0.5 V_rms / 1 kohm	⊖→⊖
2	- Audio - L	0.5 V_rms / 1 kohm	⊖→⊖

VGA

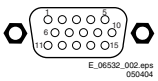

Figure 1-4 VGA Connector

1	- Red	0.7 V_pp / 75 ohm	⊖
2	- Green	0.7 V_pp / 75 ohm	⊖
3	- Blue	0.7 V_pp / 75 ohm	⊖
4	-	Ground	⏚
5	-	Ground	⏚
6	-	Ground	⏚
7	-	Ground	⏚
8	-	Ground	⏚
9	- 5V_DC	+5 V_dc	⊖
10	-	Ground	⏚
11	-	Ground	⏚
12	- DDC_SDA		⊖⊖→
13	- H-sync	0 - 5 V	⊖
14	- V-sync	0 - 5 V	⊖
15	- DDC_SCL		⊖

DVI (for 23 and 26 inch models)

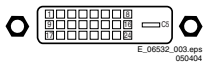

Figure 1-5 DVI connector

1	- RX2-		⊖
2	- RX2+		⊖
3	- Ground	GND	⏚
4	-	n.c.	
5	-	n.c.	
6	- SCL_DVI		⊖→
7	- SDA_DVI		⊖⊖→
8	-	n.c.	
9	- RX1-		⊖
10	- RX1+		⊖
11	- Ground	GND	⏚
12	-	n.c.	
13	-	n.c.	
14	- +5V		
15	- Ground	GND	⏚
16	- + 5V Hot Plug		
17	- RX0-		⊖
18	- RX0+		⊖
19	- Ground	GND	⏚
20	-	n.c.	
21	-	n.c.	
22	- Ground	GND	⏚
23	- RXC+		⊖
24	- RXC-		⊖
C5	- Ground	GND	⏚

PC Audio - in

3	- Audio - R	0.5 V_rms / 1 kohm	⊖→◎
2	- Audio - L	0.5 V_rms / 1 kohm	⊖→◎

1.2.2 Side connections

Figure 1-6 Side connections

Hosiden: SVHS - In

1	- Y	Ground	⏚
2	- C	Ground	⏚
3	- Y	1 Vpp / 75 ohm	⊖
4	- C	0.3 Vpp / 75 ohm	⊖

Mini Jack: Audio - in

2	- Audio - L	0.5 Vrms / 10 kohm	⊖◎
3	- Audio - R	0.5 Vrms / 10 kohm	⊖◎

Mini Jack: Headphone - Out

	- Headphone	32 - 600 ohm / 10 mW	◎ 3.5mm

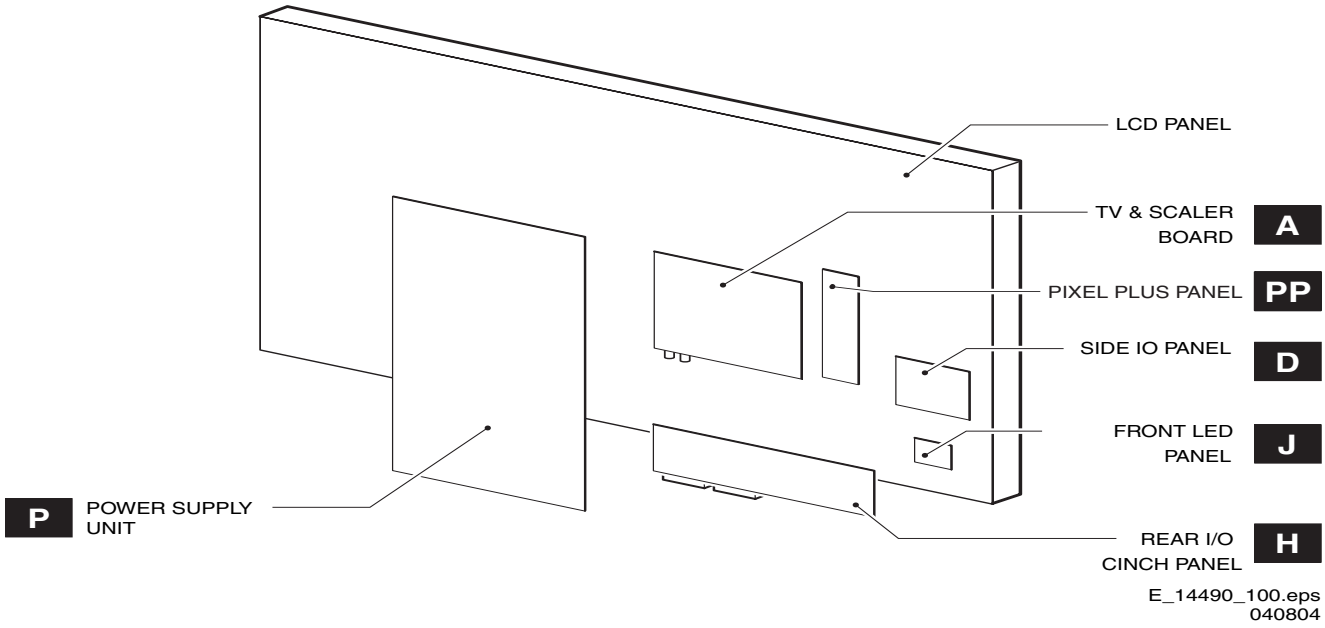

Figure 1-7 Chassis Overview

2. Safety Instructions, Warnings, and Notes

2.1 Safety Instructions

Safety regulations require that **during** a repair:
- Connect the set to the Mains via an isolation transformer (> 800 VA).
- Replace safety components, indicated by the symbol ⚠, only by components identical to the original ones. Any other component substitution (other than original type) may increase risk of fire or electrical shock hazard.

Safety regulations require that **after** a repair, the set must be returned in its original condition. Pay in particular attention to the following points:
- Route the wire trees correctly and fix them with the mounted cable clamps.
- Check the insulation of the Mains lead for external damage.
- Check the strain relief of the Mains cord for proper function.
- Check the electrical DC resistance between the Mains plug and the secondary side (only for sets which have a Mains isolated power supply):
  1. Unplug the Mains cord and connect a wire between the two pins of the Mains plug.
  2. Set the Mains switch to the "on" position (keep the Mains cord unplugged!).
  3. Measure the resistance value between the pins of the Mains plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be between 4.5 Mohm and 12 Mohm.
  4. Switch "off" the set, and remove the wire between the two pins of the Mains plug.
- Check the cabinet for defects, to avoid touching of any inner parts by the customer.

2.2 Warnings

- All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. Make sure that, during repair, you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this same potential.
  Available ESD protection equipment:
  – Complete kit ESD3 (small tablemat, wristband, connection box, extension cable and earth cable) 4822 310 10671.
  – Wristband tester 4822 344 13999.
- Be careful during measurements in the high voltage section.
- Never replace modules or other components while the unit is switched "on".
- When you align the set, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.

2.3 Notes

2.3.1 General

- Measure the voltages and waveforms with regard to the chassis (= tuner) ground (⏚), or hot ground (⏚), depending on the tested area of circuitry. The voltages and waveforms shown in the diagrams are indicative. Measure them in the Service Default Mode (see chapter 5) with a colour bar signal and stereo sound (L: 3 kHz, R: 1 kHz unless stated otherwise) and picture carrier at 475.25 MHz for PAL, or 61.25 MHz for NTSC (channel 3).
- Where necessary, measure the waveforms and voltages with (⊓) and without (⊼) aerial signal. Measure the voltages in the power supply section both in normal operation (⏻) and in standby (⏻). These values are indicated by means of the appropriate symbols.
- The semiconductors indicated in the circuit diagram and in the parts lists, are interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.
- Manufactured under license from Dolby Laboratories. “Dolby”, “Pro Logic” and the “double-D symbol”, are trademarks of Dolby Laboratories.

Figure 2-1 Dolby PL Symbol

2.3.2 Schematic Notes

- All resistor values are in ohms and the value multiplier is often used to indicate the decimal point location (e.g. 2K2 indicates 2.2 kohm).
- Resistor values with no multiplier may be indicated with either an "E" or an "R" (e.g. 220E or 220R indicates 220 ohm).
- All capacitor values are given in micro-farads (μ= x10^{-6}), nano-farads (n= x10^{-9}), or pico-farads (p= x10^{-12}).
- Capacitor values may also use the value multiplier as the decimal point indication (e.g. 2p2 indicates 2.2 pF).
- An "asterisk" (*) indicates component usage varies. Refer to the diversity tables for the correct values.
- The correct component values are listed in the Electrical Replacement Parts List. Therefore, always check this list when there is any doubt.

2.3.3 Rework on BGA (Ball Grid Array) ICs

General
Although (LF)BGA assembly yields are very high, there may still be a requirement for component rework. By rework, we mean the process of removing the component from the PWB and replacing it with a new component. If an (LF)BGA is removed from a PWB, the solder balls of the component are deformed drastically so the removed (LF)BGA has to be discarded.

Device Removal
As is the case with any component that, it is essential when removing an (LF)BGA, the board, tracks, solder lands, or surrounding components are not damaged. To remove an (LF)BGA, the board must be uniformly heated to a temperature close to the reflow soldering temperature. A uniform temperature reduces the chance of warping the PWB.
To do this, we recommend that the board is heated until it is certain that all the joints are molten. Then carefully pull the component off the board with a vacuum nozzle. For the appropriate temperature profiles, see the IC data sheet.

Area Preparation
When the component has been removed, the vacant IC area must be cleaned before replacing the (LF)BGA.
Removing an IC often leaves varying amounts of solder on the mounting lands. This excessive solder can be removed with either a solder sucker or solder wick. The remaining flux can be removed with a brush and cleaning agent.
After the board is properly cleaned and inspected, apply flux on the solder lands and on the connection balls of the (LF)BGA.
Note: Do not apply solder paste, as this has shown to result in problems during re-soldering.

Device Replacement

The last step in the repair process is to solder the new component on the board. Ideally, the (LF)BGA should be aligned under a microscope or magnifying glass. If this is not possible, try to align the (LF)BGA with any board markers. To reflow the solder, apply a temperature profile according to the *IC data sheet*. So as not to damage neighbouring components, it may be necessary to reduce some temperatures and times.

More Information

For more information on how to handle BGA devices, visit this URL: *http://www.atyourservice.ce.philips.com* (needs subscription). After login, select “Magazine”, then go to “Workshop Information”. Here you will find Information on how to deal with BGA-ICs.

2.3.4 Lead Free Solder

Some PWBs in this chassis are “lead-free **prepared**”. This is indicated on the PWB by the PHILIPS lead-free logo (either by a service-printing or by a sticker). It does not mean that lead-free solder is actually used!

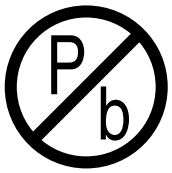

Figure 2-2 Lead-free logo

2.3.5 Practical Service Precautions

- **It makes sense to avoid exposure to electrical shock.** While some sources are expected to have a possible dangerous impact, others of quite high potential are of limited current and are sometimes held in less regard.
- **Always respect voltages**. While some may not be dangerous in themselves, they can cause unexpected reactions - reactions that are best avoided. Before reaching into a powered TV set, it is best to test the high voltage insulation. It is easy to do, and is a good service precaution.

3. Directions for Use

You can download this information from the following website:
http://www.philips.com/support

4. Mechanical Instructions

Index of this chapter:

1. Service Position
2. Rear Cover Removal
3. Power Supply Unit Removal
4. TV & Scaler Board Removal
5. I/O Panel Removal
6. Side I/O & Keyboard Panel and Front LED Panel Removal
7. Pixel Plus Panel Removal
8. Exchanging the LCD Panel
9. Re-assembly

Note: Figures below can deviate from the actual situation, due to different set executions.

Note: To diagnose the set with ComPair it is **not** needed to open the set entirely.

1. *Manually unlock and remove the cover cap (1).* See figure "TV set rear view".
2. Break away the protective plate (2) at the I/O panel bracket to get access to the needed plugs. See figure "Protective plate".

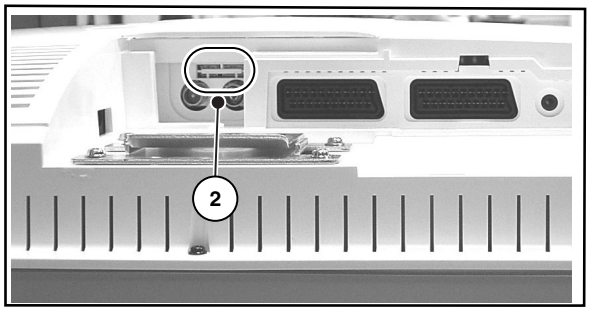

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Figure 4-1 Protective plate

4.1 Service Position

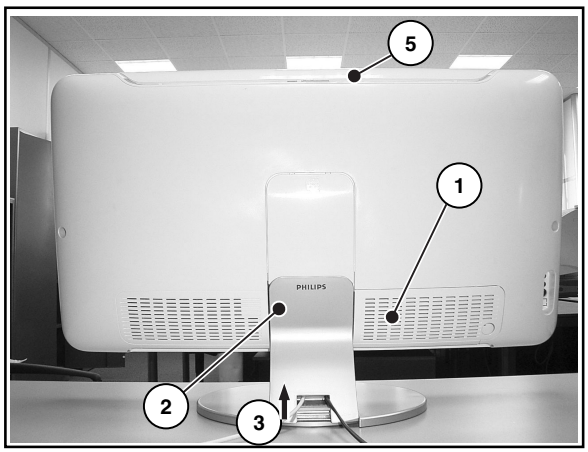

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Figure 4-2 TV set rear view

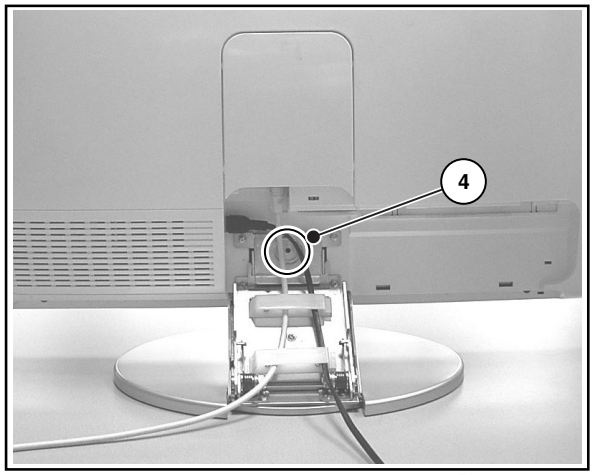

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Figure 4-3 TV stand removal

1. Carefully pull upwards the cover plate (2) (from it's left side) to unlock it (3) and remove the plate from the stand.
2. Unplug the AC power and the antenna cables.
3. Be sure to remove the coin slotted mounting screw (4) from the stand.
4. Carefully lift the TV from the swivel base (it uses a vertical sliding mechanism).
5. Place the TV upside down on a tabletop (use a protection sheet or foam bars). Take care, that this is flat and free from obstacles like screws, to prevent damaging the fragile LCD screen.

4.1.1 Foam Bars

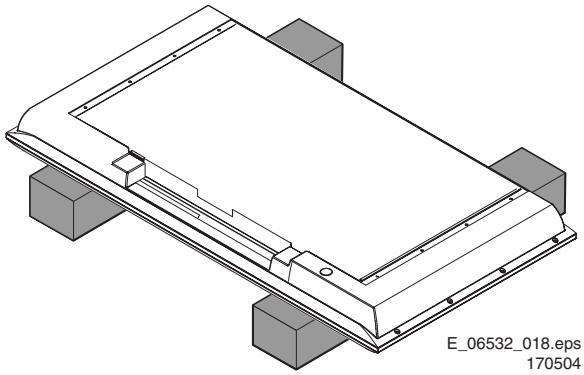

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Figure 4-4 Foam bars

The foam bars (order code 3122 785 90580) can be used for all types and sizes of Flat TVs. By laying the plasma or LCD TV flat on the (ESD protective) foam bars, a stable situation is created to perform measurements and alignments. By placing a mirror under the TV, you can easily monitor the screen.

4.2 Rear Cover Removal

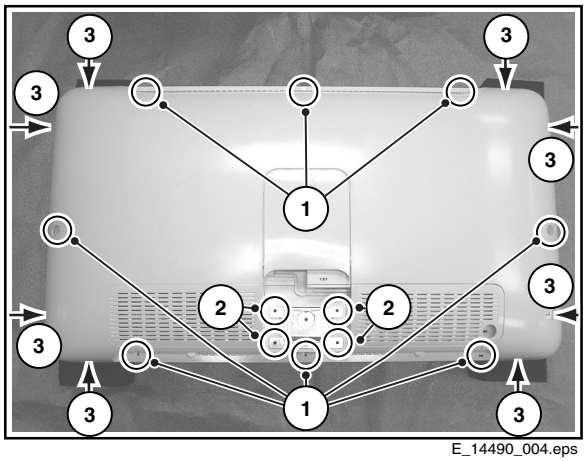

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Figure 4-5 Rear cover removal

1. Manually unlock and remove the top cover cap (5). See Figure: “TV set rear view”.
2. Make sure all power-, audio-, video- and coax- cables are unplugged.
3. Remove all Torx screws (1) around the edges of the rear cover.
4. Remove the four silver coloured Torx screws (2) around the stand holder. See figure “Rear cover removal”.
5. Carefully use a flat screwdriver to release the clamps (3). See figure “Rear cover removal”.
6. Remove the rear cover and store it in a safe place.

Note: avoid holding the button-area during removal (it can be easily damaged).

4.3 Power Supply Unit Removal

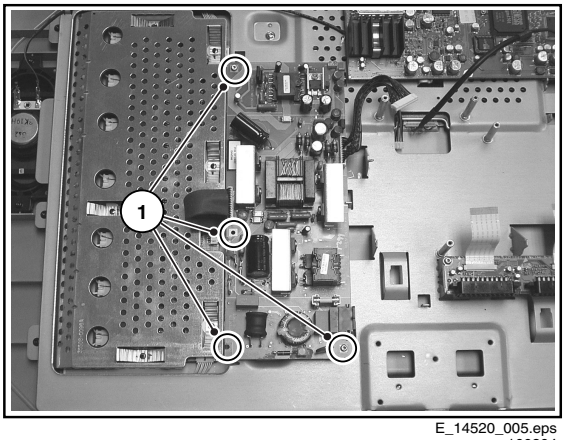

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Figure 4-6 Power supply unit

1. Disconnect all cables from the Power supply unit.
2. Remove all mounting screws (1) from the Power supply unit.
3. Take out the Power supply unit.

4.4 TV & Scaler Board Removal

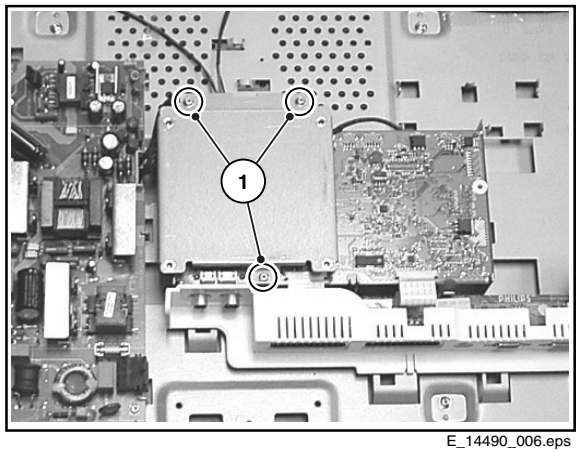

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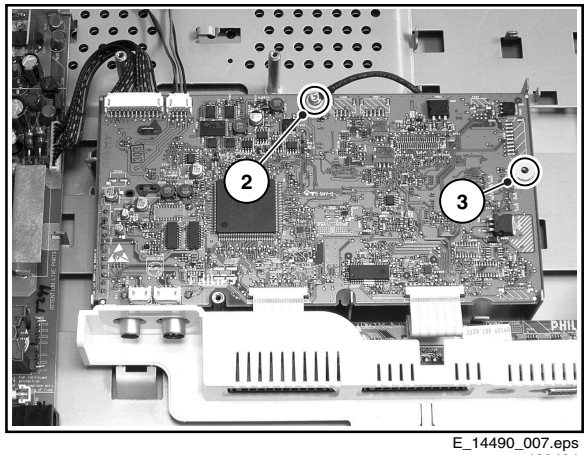
Figure 4-7 : TV & Scaler board shield removal



E_14490_007.eps
130404

Figure 4-8 : TV & Scaler board removal

1. Disconnect all cables from the TV & Scaler board.
2. Remove all shield mounting screws (1) and remove the shield.
3. Remove the screw from the grounding cable (2).
4. Remove the mounting screw (3) and remove the board.

4.5 I/O Panel Removal

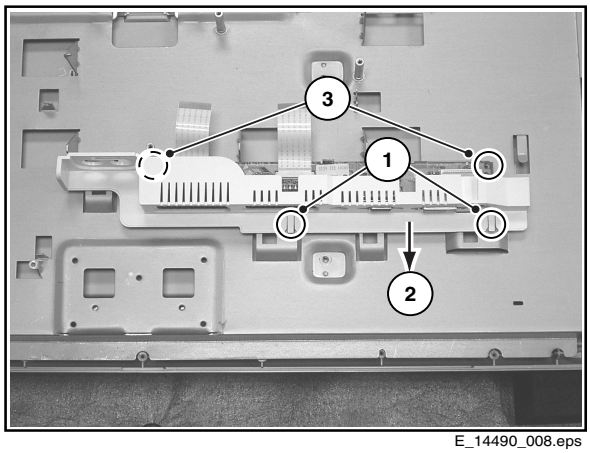


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Figure 4-9 I/O panel removal

1. Release the two clamps (1) at the I/O panel bracket. Carefully pull the bracket in the direction (2), as shown at the figure “I/O panel removal”, and remove it.
2. Disconnect all cables from the I/O panel.
3. Remove all mounting screws from the I/O panel (3).
4. Take out the I/O panel.

4.6 Side I/O & Keyboard Panel and Front LED Panel Removal

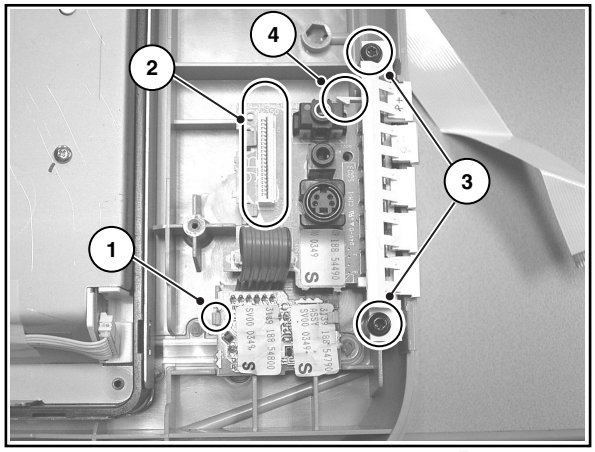

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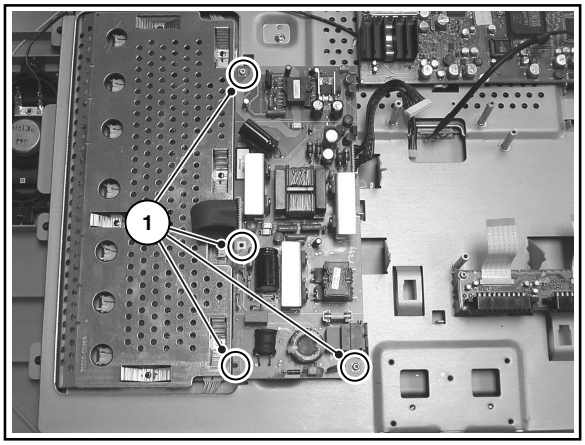
Figure 4-10 Side I/O & Keyboard panel and Front LED panel removal

1. Release the clamp (1) and take out the Front LED panel.
2. Disconnect the cable (2) from the Side I/O & Keyboard panel.
3. Remove all mounting screws (3) from the Side I/O & Keyboard panel bracket.
4. Unlock this unit by shifting it to the outside direction of the monitor.
5. Release the clamp (4) and take out the Side I/O & Keyboard panel from the bracket.

4.7 Pixel Plus Panel Removal

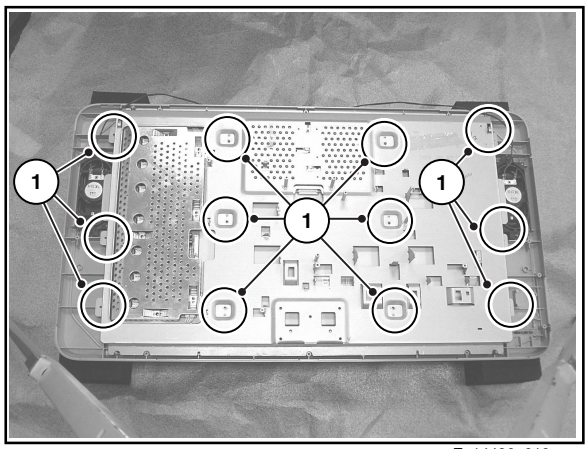


E_14520_005.eps
100204

Figure 4-11 Pixel Plus panel removal

1. Disconnect all cables from the Pixel Plus panel.
2. Remove all mounting screws from the Pixel Plus panel.
3. Take out the Pixel Plus panel.

4.8 Exchanging the LCD Panel



E_14490_010.eps
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Figure 4-12 Exchanging the LCD panel

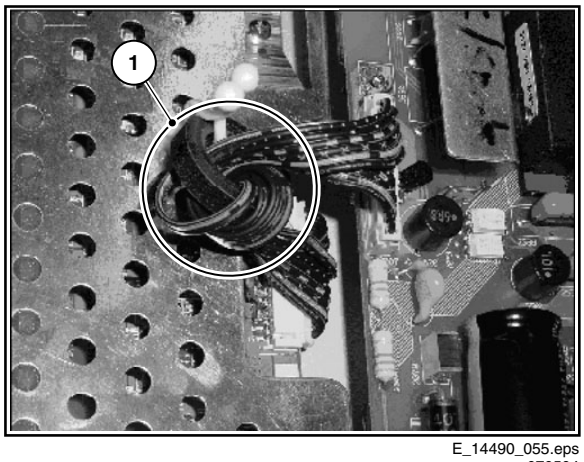
1. Disconnect all cables from the LCD Panel.
2. Remove all mounting screws (1) from the metal cover.
3. Lift and take off the metal cover.
4. Now you can exchange the LCD panel.

4.9 Re-Assembly

To re-assemble the whole set, do all processes in reverse order.

Notes:

- Do **not** forget to replace the ground cable of the TV & Scaler board, while mounting the screw at the board topside. See figure “TV & Scaler board removal”.
- Make sure the ferrite ring (1) is properly tightened to the clip (this is valid only for 26 inch sets).



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070504

Figure 4-13 Ferrite ring

5. Service Modes, Error Codes, and Fault Finding

Index of this chapter:
1. Test Points
2. Service Modes
3. Problems and Solving Tips (related to CSM)
4. ComPair
5. Error Codes
6. The Blinking LED Procedure
7. Fault Finding and Repair Tips
8. Power Supply

5.1 Test Points

This chassis is equipped with test points in the service printing. In the schematics test points are identified with a rectangle box around Fxxx or Ixxx. These test points are specifically mentioned in the service manual as “half moons” with a dot in the centre.
Perform measurements under the following conditions:
- Television set in Service Default Alignment Mode.
- Video input: Colour bar signal.
- Audio input: 3 kHz left channel, 1 kHz right channel.

5.2 Service Modes

Service Default mode (SDM) and Service Alignment Mode (SAM) offers several features for the service technician, while the Customer Service Mode (CSM) is used for communication between the call centre and the customer.

This chassis also offers the option of using ComPair, a hardware interface between a computer and the TV chassis. It offers the abilities of structured troubleshooting, error code reading, and software version readout for all chassis.
Minimum requirements for ComPair: a Pentium processor, a Windows OS, and a CD-ROM drive (see also paragraph "ComPair").

5.2.1 Service Default Mode (SDM)

Purpose
- To create a predefined setting for measurements to be made.
- To override software protections.
- To start the blinking LED procedure.
- To inspect the error buffer.
- To check the life timer.

Specifications
- Tuning frequency: 475.25 MHz.
- Colour system: PAL-BG.
- All picture settings at 50% (brightness, colour contrast, hue).
- Bass, treble and balance at 50 %; volume at 25 %.
- All service-unfriendly modes (if present) are disabled. The service unfriendly modes are:
  - Timer / Sleep timer.
  - Child / parental lock.
  - Blue mute.
  - Hotel / hospital mode.
  - Auto shut off (when no “IDENT” video signal is received for 15 minutes).
  - Skipping of non-favourite presets / channels.
  - Auto-storage of personal presets.
  - Auto user menu time-out.
  - Auto Volume Levelling (AVL).

How to enter
To enter SDM, use one of the following methods:
- Press the following key sequence on the remote control transmitter: “062596” directly followed by the MENU button (do not allow the display to time out between entries while keying the sequence).
- Short "Service" jumpers on the TV board during cold start and apply mains (see Figure "Service jumpers"). Then press the mains button (remove the short after start-up). **Caution**: Entering SDM by shorting "Service" jumpers will override the +8V-protection. Do this only for a short period. When doing this, the service-technician must know exactly what he is doing, as it could damage the television set.
- Or via ComPair.

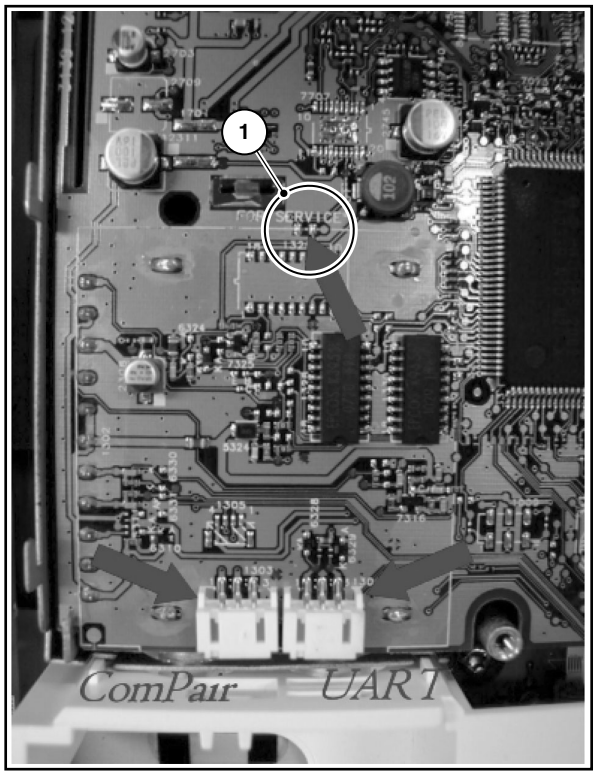

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Figure 5-1 E Service jumpers

After entering SDM, the following screen is visible, with SDM in the upper right corner of the screen to indicate that the television is in Service Default Alignment Mode.

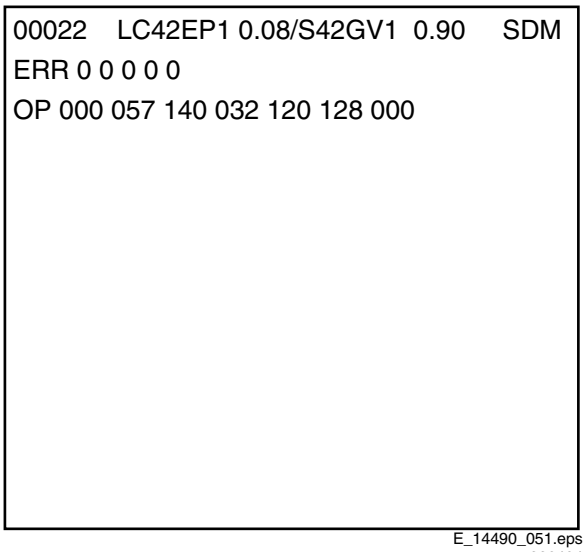

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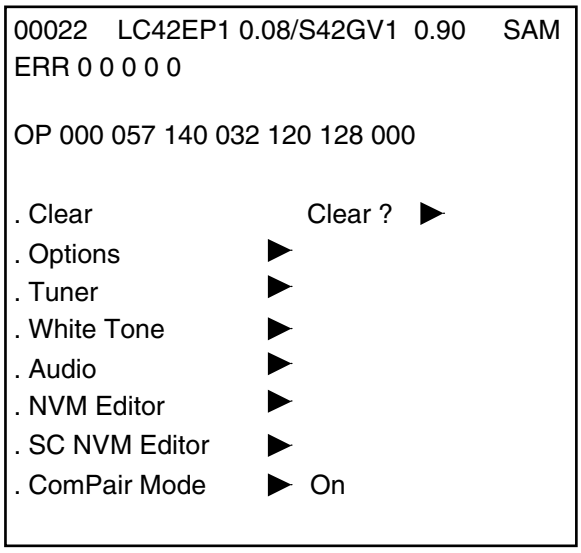
Figure 5-2 SDM menu

After entering SAM, the following screen is visible, with SAM in the upper right corner of the screen to indicate that the television is in Service Alignment Mode.


00022 LC42EP1 0.08/S42GV1 0.90 SAM
ERR 0 0 0 0 0
OP 000 057 140 032 120 128 000
. Clear Clear ? ▶
. Options ▶
. Tuner ▶
. White Tone ▶
. Audio ▶
. NVM Editor ▶
. SC NVM Editor ▶
. ComPair Mode ▶ On

E_14490_052eps
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Figure 5-3 SAM menu

How to navigate

Use one of the following methods:

- When you press the MENU button on the remote control, the set will switch on the normal user menu in the SDM mode.
- On the TV, press and hold the VOLUME DOWN and press the CHANNEL DOWN for a few seconds, to switch from SDM to SAM and reverse.

How to exit

Switch the set to STANDBY by pressing the mains button on the remote control transmitter or the television set.
If you turn the television set off by removing the mains (i.e., unplugging the television) without using the mains button, the television set will remain in SDM when mains is re-applied, and the error buffer is not cleared.

5.2.2 Service Alignment Mode (SAM)

Purpose

- To change option settings.
- To display / clear the error code buffer.
- To perform alignments.

Specifications

- Operation hours counter (maximum five digits displayed).
- Software version, Error codes, and Option settings display.
- Error buffer clearing.
- Option settings.
- AKB switching.
- Software alignments (Tuner, White Tone, Geometry & Audio).
- NVM Editor.
- ComPair Mode switching.

How to enter

To enter SAM, use one of the following methods:

- Press the following key sequence on the remote control transmitter: “062596" directly followed by the OSD/ STATUS button (do not allow the display to time out between entries while keying the sequence).
- Or via ComPair.

Menu explanation

1. **LLLLL.** This represents the run timer. The run timer counts normal operation hours, but does not count standby hours.
2. **AAAABCD-X.Y/ EEEEEE F.GG.** This is the software identification of the main microprocessor followed by the software identification for the scaler IC:
   - **A**= the project name (LC42).
   - **B**= the region: E= Europe, A= Asia Pacific, U= NAFTA, L= LATAM.
   - **C**= the software diversity:
     - **Europe:** T= 1 page TXT, F= Full TXT, V= Voice control.
     - **LATAM and NAFTA:** N= Stereo non-dBx, S= Stereo dBx.
     - **Asian Pacific:** T= TXT, N= non-TXT, C= NTSC.
     - **ALL regions:** M= mono, D= DVD, Q= Mk2.
   - **D**= the language cluster number.
   - **X**= the main software version number (updated with a major change that is incompatible with previous versions).
   - **Y**= the sub software version number (updated with a minor change that is compatible with previous versions).
   - **EEEEEE**= the scaler sw cluster
   - **F**= the main sw version no.
   - **GG**= the sub-version no.
3. **SAM.** Indication of the Service Alignment Mode.
4. **Error Buffer.** Shows all errors detected since the last time the buffer was erased. Five errors possible.
5. **Option Bytes.** Used to set the option bytes. See “Options” in the Alignments section for a detailed description. Seven codes are possible.
6. **Clear.** Erases the contents of the error buffer. Select the CLEAR menu item and press the MENU RIGHT key. The content of the error buffer is cleared.
7. **Options.** Used to set the option bits. See “Options” in the Alignments section for a detailed description.
8. **Tuner.** Used to align the tuner. See “Tuner” in the Alignments section for a detailed description.
9. **White Tone.** Used to align the white tone. See “White Tone” in the Alignments section for a detailed description.
10. **Audio.** No audio alignment is necessary for this television set.

11. **NVM Editor.** Can be used to change the NVM data in the television set. See table “NVM data” further on.
12. **SC NVM Editor.** Can be used to edit Scaler NVM.
13. **ComPalr.** Can be used to switch on the television to In System Programming (ISP) mode, for software uploading via ComPair.
    Caution: When this mode is selected without ComPair connected, the TV will be blocked. Remove the AC power to reset the TV.

How to navigate
- In SAM, select menu items with the MENU UP/DOWN keys on the remote control transmitter. The selected item will be highlighted. When not all menu items fit on the screen, use the MENU UP/DOWN keys to display the next / previous menu items.
- With the MENU LEFT/RIGHT keys, it is possible to:
  – Activate the selected menu item.
  – Change the value of the selected menu item.
  – Activate the selected submenu.
- In SAM, when you press the MENU button twice, the set will switch to the normal user menus (with the SAM mode still active in the background). To return to the SAM menu press the MENU or STATUS/EXIT button.
- When you press the MENU key in while in a submenu, you will return to the previous menu.

How to store SAM settings
To store the settings changed in SAM mode, leave the top level SAM menu by using the POWER button on the remote control transmitter or the television set.

How to exit
Switch the set to STANDBY by pressing the mains button on the remote control transmitter or the television set.
If you turn the television set “off” by removing the mains (i.e., unplugging the television) without using the mains button, the television set will remain in SAM when mains is re-applied, and the error buffer is not cleared.

5.2.3 Customer Service Mode (CSM)

Purpose
The Customer Service Mode shows error codes and information on the TV’s operation settings. The call centre can instruct the customer (by telephone) to enter CSM in order to identify the status of the set. This helps the call centre to diagnose problems and failures in the TV set before making a service call.
The CSM is a read-only mode; therefore, modifications are not possible in this mode.

How to enter
To enter CSM, press the following key sequence on the remote control transmitter: “123654” (do not allow the display to time out between entries while keying the sequence).

Upon entering the Customer Service Mode, the following screen will appear:

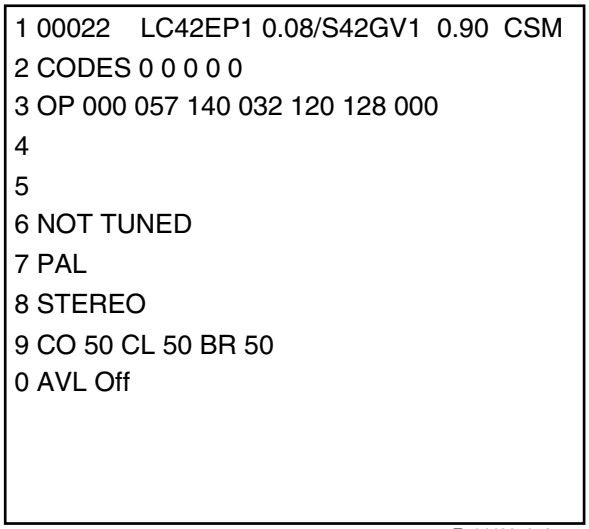

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Figure 5-4 CSM menu

Menu explanation
1. Indication of the decimal value of the operation hours counter, Software identification of the main microprocessor (see "Service Default or Alignment Mode" for an explanation), and the service mode (CSM= Customer Service Mode).
2. Displays the last five errors detected in the error code buffer.
3. Displays the option bytes.
4. Displays the type number version of the set.
5. Reserved item for P3C call centres (AKBS stands for Advanced Knowledge Base System).
6. Indicates the television is receiving an "IDENT" signal on the selected source. If no "IDENT" signal is detected, the display will read "NOT TUNED"
7. Displays the detected Colour system (e.g. PAL/NTSC).
8. Displays the detected Audio (e.g. stereo/mono).
9. Displays the picture setting information.
10. Displays the sound setting information.

How to exit
To exit CSM, use one of the following methods:
- Press the MENU, STATUS/EXIT, or POWER button on the remote control transmitter.
- Press the POWER button on the television set.

5.3 Problems and Solving Tips Related to CSM

5.3.1 Picture Problems

Note: The problems described below are all related to the TV settings. The procedures used to change the value (or status) of the different settings are described.

Picture too dark or too bright

If:
- The picture improves when you press the AUTO PICTURE button on the remote control transmitter, or
- The picture improves when you enter the Customer Service Mode,

Then:
1. Press the AUTO PICTURE button on the remote control transmitter repeatedly (if necessary) to choose PERSONAL picture mode.
2. Press the MENU button on the remote control transmitter. This brings up the normal user menu.
3. In the normal user menu, use the MENU UP/DOWN keys to highlight the PICTURE sub menu.
4. Press the MENU LEFT/RIGHT keys to enter the PICTURE sub menu.
5. Use the MENU UP/DOWN keys (if necessary) to select BRIGHTNESS.
6. Press the MENU LEFT/RIGHT keys to increase or decrease the BRIGHTNESS value.
7. Use the MENU UP/DOWN keys to select PICTURE.
8. Press the MENU LEFT/RIGHT keys to increase or decrease the PICTURE value.
9. Press the MENU button on the remote control transmitter twice to exit the user menu.
10. The new PERSONAL preference values are automatically stored.

White line around picture elements and text

If:
The picture improves after you have pressed the AUTO PICTURE button on the remote control transmitter,

Then:
1. Press the AUTO PICTURE button on the remote control transmitter repeatedly (if necessary) to choose PERSONAL picture mode.
2. Press the MENU button on the remote control transmitter. This brings up the normal user menu.
3. In the normal user menu, use the MENU UP/DOWN keys to highlight the PICTURE sub menu.
4. Press the MENU LEFT/RIGHT keys to enter the PICTURE sub menu.
5. Use the MENU UP/DOWN keys to select SHARPNESS.
6. Press the MENU LEFT key to decrease the SHARPNESS value.
7. Press the MENU button on the remote control transmitter twice to exit the user menu.
8. The new PERSONAL preference value is automatically stored.

Snowy picture
Check CSM line 6. If this line reads “Not Tuned”, check the following:
- Antenna not connected. Connect the antenna.
- No antenna signal or bad antenna signal. Connect a proper antenna signal.
- The tuner is faulty (in this case line 2, the Error Buffer line, will contain error number 10). Check the tuner and replace/ repair the tuner if necessary.

Black and white picture

If:
- The picture improves after you have pressed the AUTO PICTURE button on the remote control transmitter,

Then:
1. Press the AUTO PICTURE button on the remote control transmitter repeatedly (if necessary) to choose PERSONAL picture mode.
2. Press the MENU button on the remote control transmitter. This brings up the normal user menu.
3. In the normal user menu, use the MENU UP/DOWN keys to highlight the PICTURE sub menu.
4. Press the MENU LEFT/RIGHT keys to enter the PICTURE sub menu.
5. Use the MENU UP/DOWN keys to select COLOUR.
6. Press the MENU RIGHT key to increase the COLOUR value.
7. Press the MENU button on the remote control transmitter twice to exit the user menu.
8. The new PERSONAL preference value is automatically stored.

Menu text not sharp enough

If:
- The picture improves after you have pressed the AUTO PICTURE button on the remote control transmitter,

Then:
1. Press the AUTO PICTURE button on the remote control transmitter repeatedly (if necessary) to choose PERSONAL picture mode.
2. Press the MENU button on the remote control transmitter. This brings up the normal user menu.
3. In the normal user menu, use the MENU UP/DOWN keys to highlight the PICTURE sub menu.
4. Press the MENU LEFT/RIGHT keys to enter the PICTURE sub menu.
5. Use the MENU UP/DOWN keys to select PICTURE.
6. Press the MENU LEFT key to decrease the PICTURE value.
7. Press the MENU button on the remote control transmitter twice to exit the user menu.
8. The new PERSONAL preference value is automatically stored.

5.4 ComPair

5.4.1 Introduction

ComPair (Computer Aided Repair) is a service tool for Philips Consumer Electronics products. ComPair is a further development on the European DST (service remote control), which allows faster and more accurate diagnostics. ComPair has three big advantages:
ComPair helps you to quickly get an understanding on how to repair the chassis in a short time by guiding you systematically through the repair procedures.
ComPair allows very detailed diagnostics (on I2C level) and is therefore capable of accurately indicating problem areas. You do not have to know anything about I2C commands yourself because ComPair takes care of this.
ComPair speeds up the repair time since it can automatically communicate with the chassis (when the microprocessor is working) and all repair information is directly available. When ComPair is installed together with the SearchMan electronic manual of the defective chassis, schematics and PWBs are only a mouse click away.

5.4.2 Specifications

ComPair consists of a Windows based faultfinding program and an interface box between PC and the (defective) product. The ComPair interface box is connected to the PC via a serial or RS232 cable.
In this chassis, the ComPair interface box and the TV communicate via a bi-directional service cable via the service connector.

The ComPair faultfinding program is able to determine the problem of the defective television. ComPair can gather diagnostic information in two ways:
- **Automatic** (by communication with the television): ComPair can automatically read out the contents of the entire error buffer. Diagnosis is done on I2C level. ComPair can access the I2C bus of the television. ComPair can send and receive I2C commands to the micro controller of the television. In this way, it is possible for ComPair to

communicate (read and write) to devices on the I2C busses of the TV-set.
- **Manually** (by asking questions to you): Automatic diagnosis is only possible if the micro controller of the television is working correctly and only to a certain extend. When this is not the case, ComPair will guide you through the faultfinding tree by asking you questions (e.g. *Does the screen give a picture? Click on the correct answer: YES / NO*) and showing you examples (e.g. *Measure test-point I7 and click on the correct waveform you see on the oscilloscope*). You can answer by clicking on a link (e.g. text or a waveform picture) that will bring you to the next step in the faultfinding process.

By a combination of automatic diagnostics and an interactive question / answer procedure, ComPair will enable you to find most problems in a fast and effective way.

Beside fault finding, ComPair provides some **additional features** like:
- Up- or downloading of pre-sets.
- Managing of pre-set lists.
- If both ComPair and SearchMan (Electronic Service Manual) are installed, all the schematics and the PWBs of the set are available by clicking on the appropriate hyperlink. **Example**: *Measure the DC-voltage on capacitor C2568 (Schematic/Panel) at the Mono-carrier*.
  - Click on the 'Panel' hyperlink to automatically show the PWB with a highlighted capacitor C2568.
  - Click on the 'Schematic' hyperlink to automatically show the position of the highlighted capacitor.

5.4.3 How To Connect

1. First, install the ComPair Browser software (see the Quick Reference Card for installation instructions).
2. Connect the RS232 interface cable between a free serial (COM) port of your PC and the PC connector (marked with 'PC') of the ComPair interface.
3. Connect the mains adapter to the supply connector (marked with 'POWER 9V DC') of the ComPair interface.
4. Switch the ComPair interface “off”.
5. Switch the television set “off” with the mains switch.
6. Connect the ComPair interface cable with the connector on the rear side of the ComPair interface (marked with 'I2C') and the additional ComPair interface cable. Connect the other side of the additional ComPair interface cable with the ComPair (or *Service*) connector at the rear side of the TV.
7. Plug the mains adapter in a mains outlet, and switch the interface “on”. The green and red LEDs light up together. The red LED extinguishes after approx. 1 second while the green LED remains lit.
8. Start the ComPair program and read the 'Introduction' chapter.

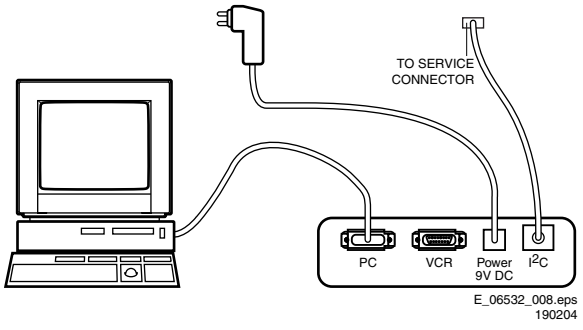

Figure 5-5 ComPair Interface connection

5.4.4 How To Order

ComPair order codes (EU/AP/LATAM):
- Starter kit ComPair32/SearchMan32 software and ComPair interface (excl. transformer): 3122 785 90450.
- ComPair interface (excluding transformer): 4822 727 21631.
- Starter kit ComPair32 software (registration version): 3122 785 60040.
- Starter kit SearchMan32 software: 3122 785 60050.
- ComPair32 CD (update): 3122 785 60070 (year 2002, 3122 785 60110 (year 2003).
- SearchMan32 CD (update): 3122 785 60080 (year 2002), 3122 785 60120 (year 2003), 3122 785 60130 (year 2004).
- ComPair interface cable: 3122 785 90004.
- ComPair firmware upgrade IC: 3122 785 90510.
- Transformer (non-UK): 4822 727 21632.
- Transformer UK: 4822 727 21633.
- Additional ComPair interface cable: 3139 131 0379.

Note: If you encounter any problems, contact your local support desk.

5.5 Error Codes

The error code buffer contains all errors detected since the last time the buffer was erased. The buffer is written from left to right. When an error occurs that is not yet in the error code buffer, it is displayed at the left side and all other errors shift one position to the right.

5.5.1 How To Read The Error Buffer

You can read the error buffer in 3 ways:
- On screen via the SAM (if you have a picture).
  Examples:
  - ERROR: 0 0 0 0 0 : No errors detected
  - ERROR: 6 0 0 0 0 : Error code 6 is the last and only detected error
  - ERROR: 9 6 0 0 0 : Error code 6 was detected first and error code 9 is the last detected (newest) error
- Via the blinking LED procedure (when you have no picture). See “The Blinking LED Procedure”.
- Via ComPair.

5.5.2 How To Clear The Error Buffer

The error code buffer is cleared in the following cases:
- By using the CLEAR command in the SAM menu:
  - To enter SAM, press the following key sequence on the remote control transmitter: “062596” directly followed by the OSD/STATUS button (do not allow the display to time out between entries while keying the sequence).
  - Make sure the menu item CLEAR is highlighted. Use the MENU UP/DOWN buttons, if necessary.
  - Press the MENU RIGHT button to clear the error buffer. The text on the right side of the “CLEAR” line will change from “CLEAR?” to “CLEARED”
- If the contents of the error buffer have not changed for 50 hours, the error buffer resets automatically.

Note: If you exit SAM by disconnecting the mains from the television set, the error buffer is not reset.

5.5.3 Error Codes

In case of non-intermittent faults, write down the errors present in the error buffer and clear the error buffer before you begin the repair. This ensures that old error codes are no longer present.

If possible, check the entire contents of the error buffer. In some situations, an error code is only the result of another error and not the actual cause of the problem (for example, a fault in the protection detection circuitry can also lead to a protection).

Table 5-1 Error code overview

Error	Device	Error description	Check item	Diagram
0	Not applicable	No Error		
1	Not applicable	-	-	-
2	Not applicable	-	-	-
3	Not applicable	-	-	-
4	GM1501	I2C error while communicating with the Genesis Scaler and/or Flash-ROM is faulty/ empty	7401 7530	A7A11
5	Not applicable	+5v protection	7930	A6
6	I2C bus	General I2C error	7011, 3088, 3096	A2
7	Not applicable	-	-	-
8	M24C32	I2C error while communicating with the Scaler EEPROM	7531	A11
9	M24C16	I2C error while communicating with the EEPROM	7099	A2
10	Tuner	I2C error while communicating with the PLL tuner	1302, 3302, 3303, 3327	A1
11	Not applicable	-	-	-
12	Not applicable	-	-	-
13	Not applicable	-	-	-
14	K4D263238M	Read-write error with the Scaler SDRAM	7501	A10
15	TDA9178T/N1	I2C error while communicating with Histogram	7560	A3
16	EPIC12F	I2C error while communicating with EPLD on Pixel Plus panel	7101	PP1

5.6 The Blinking LED Procedure

Using this procedure, you can make the contents of the error buffer visible via the front LED. This is especially useful when there is no picture.

When the SDM is entered, the front LED will blink the contents of the error-buffer:
- The Led blinks with as many pulses as the error code number, followed by a time period of 1.5 seconds, in which the Led is off.
- Then this sequence starts is repeated.

Any RC5 command terminates this sequence.

Example of error buffer: **12 9 6 0 0**
After entering SDM, the following occurs:
- 1 long blink of 5 seconds to start the sequence,
- 12 short blinks followed by a pause of 1.5 seconds,
- 9 short blinks followed by a pause of 1.5 seconds,
- 6 short blinks followed by a pause of 1.5 seconds,
- 1 long blink of 1.5 seconds to finish the sequence,
- The sequence starts again at 12 short blinks.

5.7 Fault Finding and Repair Tips

Notes:
- It is assumed that the components are mounted correctly with correct values and no bad solder joints.
- Before any fault finding actions, check if the correct options are set.

5.7.1 NVM Editor

In some cases, it can be handy if one directly can change the NVM contents. This can be done with the “NVM Editor” in SAM mode.

5.7.2 Load default NVM values

In case a blank NVM is placed or when the NVM content is corrupted, default values can be downloaded into the NVM. After the default values are downloaded it will be possible to start up and to start aligning the TV set. This is no longer initiated automatically; to initiate the download the following action has to be performed:
1. Switch off the TV set via the mains switch
2. Short circuit the SDM jumpers (keep short circuited)
3. Press P+ or Ch+ on the local keyboard (and keep it pressed)
4. Switch on the TV set via the mains switch
5. When the set has started up the P+/Ch+ button can be released and the short circuit of the SDM jumpers can be removed.
6. The red LED will be on continuously to indicate that the download is initiated (normally when SDM is activated the red LED will start with the Blinking LED sequence).
7. Wait +/- 30 Seconds (time needed to download default values to the NVM)

Result: The set is in SDM, the NVM is loaded with default values and the blinking LED is not activated (The blinking LED is not activated in this case to show that the download has been performed), the LED will be on.

5.7.3 Tuner and IF

No Picture in RF mode
1. Check whether picture is present in AV. If not, go to Video processing troubleshooting section.
2. If present, check that the Option settings are correct.
3. Check that all supply voltages are present.
4. Check if I2C lines are working correctly (3.3V).
5. Manually store a known channel and check if there is IF output at Tuner pin 11.
6. Feed in 105 dBuV at Tuner pin 11 and check whether there is RGB output from Video Processing IC. If yes, Tuner may be defected. Change Tuner.

Sound in picture problem for L' system (rolling horizontal lines)
1. Check whether AGC L' in Sam mode is set to 0.
2. If yes, align the set to correct value.

Required system is not selected correctly
1. Check whether the Service jumper (#4022, 08 05 size) is present. If yes, remove it.
2. Check whether SEL_IF pin is according to what is specified.

5.7.4 Video Processing

No power
1. Check +12 V and 3V3 at position 1910.
2. If no supply, check the connector 1910.
3. If it is correct, check the power supply board.

Power supply is correct but no green light
1. Check the two connectors 1005 and 1601, if they are properly inserted.
2. If they are inserted correctly, check if the 3V3 is present.

No picture display
1. Check the RGB signal.
2. If it is present, check 3-IC7016 (NE555).
3. If it has output, the problem is in SCALER part.
4. Otherwise, check H-out on pin 2 of NE555. If the input signal of pin2 is present, but no output, the IC is failed.

Note:
- If the H-out (pin 67) doesn't have signal or the level is low, check the output of NE555 (pin 3) during start up.
- If the H-out (pin 67) has a signal (or has a signal for a very short time), change IC7016 (NE555).

No TV but PC is present
1. Check if HSYNC and VSYNC are present at PIN 3 of 7071 and 7015.
2. If they are present, check RGB output.
3. If there is no RGB output, the IC TDA120xx can be failed.

Comb Filter not working
1. Check the option bit 5 in SAM.
2. Check NVM setting. Address 1229 is 0000.

5.7.5 Power Supply

Check fuses
This power supply contains three fuses. One is near the mains inlet (marked on the board as 1102) and two other are near the output connectors (marked 1610 and 1660).

1. Check with power supply in off state by means of ohmic measurement.
2. Fuse 1102 may open in case of severe lightning strikes and/or failures in the power supply. Despite the fact, that this fuse is mounted in a fuse holder and the marking text on the board, it is not meant to be field replaceable.
3. Fuses 1610 and 1660 may open in case a severe overload of the 12 V outputs. Replacement of the power supply is needed, but not before the cause of the overload conditions is resolved.

Standby mode
1. Apply a 12 ohm load resistor of sufficient power rating to all outputs (+3 V3, +12 VAL, +12 VL and +24 V). Connect the STBY pin to GND.
2. Over an input voltage range of 90 V_ac to 264 V_ac only the +3 V3 output shall be up and within regulation (±5%). The voltage on the POWER DOWN pin shall be < 0.3 V at an input voltage below 160 V_ac, and 3.3 V ±10% at an input voltage higher than 240 V_ac.

Normal mode:
1. Apply a 12 ohm load resistor of sufficient power rating to all outputs (+3 V3, +12 VAL, +12 VL and +24 V). Connect the STBY pin to the +3 V3 output.
2. Over an input voltage range of 90 V _ac to 264 V_ac all outputs shall be up and within regulation (±5%). The voltage on the POWER DOWN pin shall be 3.3 V ±10% over the entire input voltage range. Additionally, the voltage on the big capacitor mounted flat on the PCB shall be 400 V ±10%

Personal Notes:

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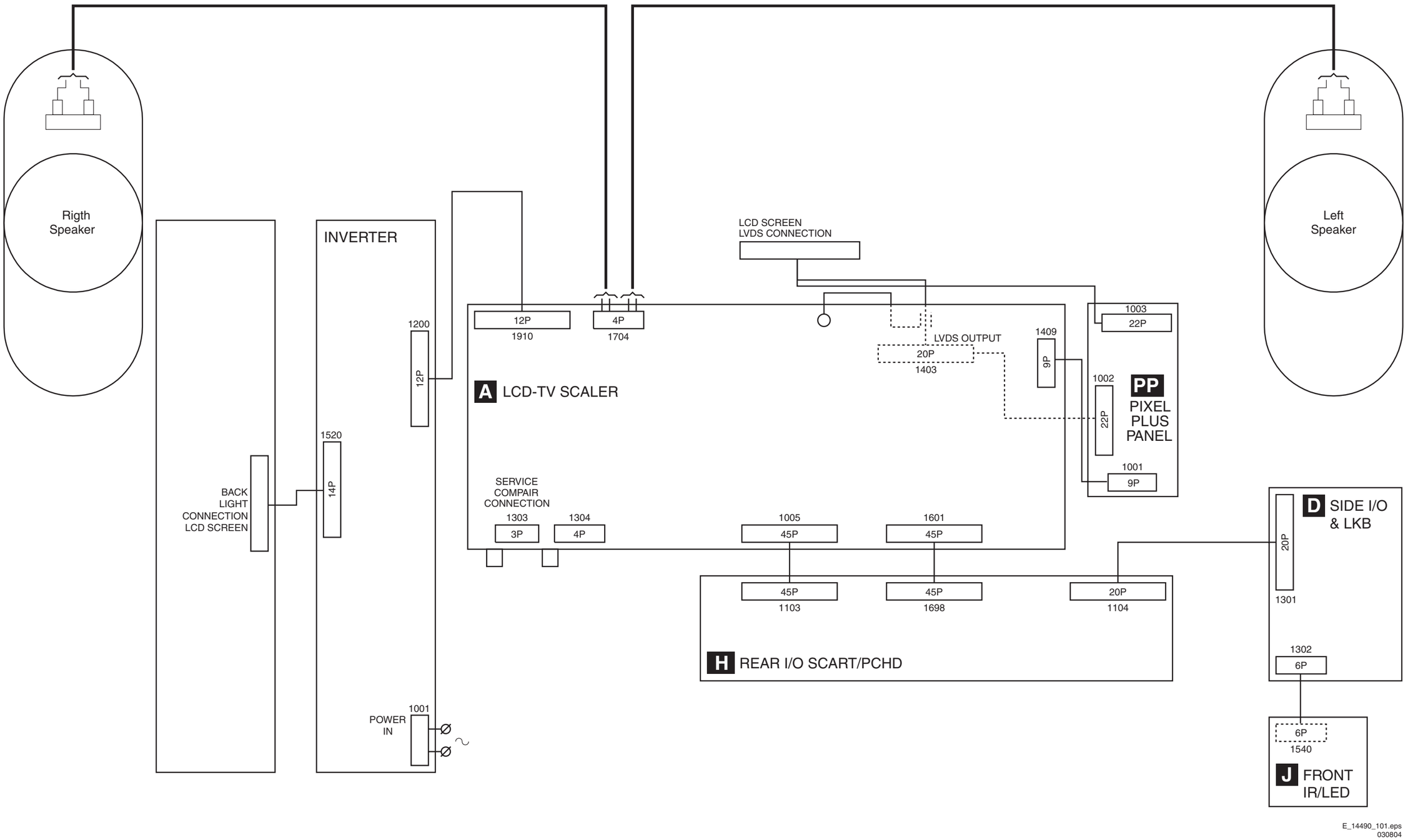
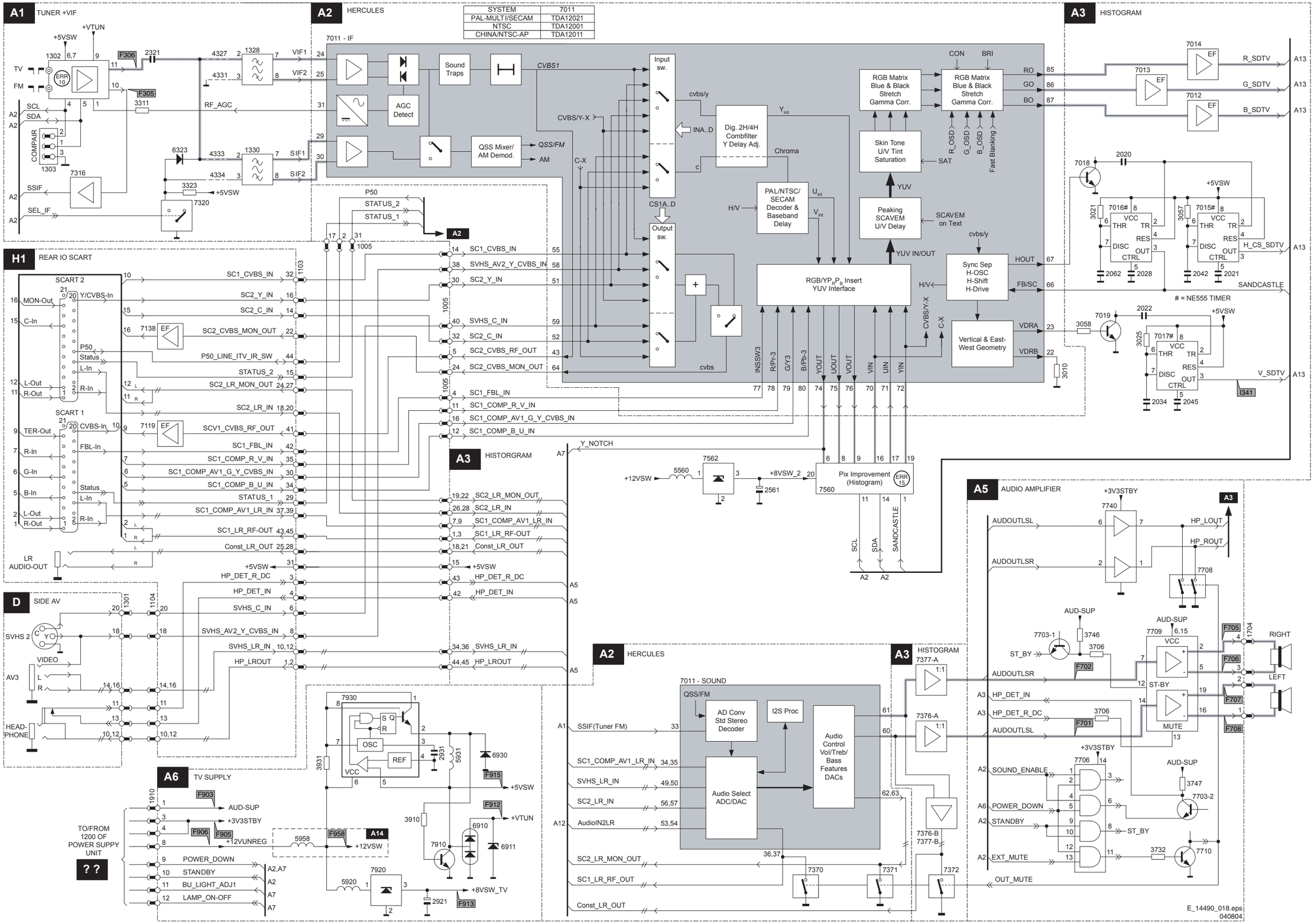
6. Block Diagrams, Testpoint Overviews, and Waveforms

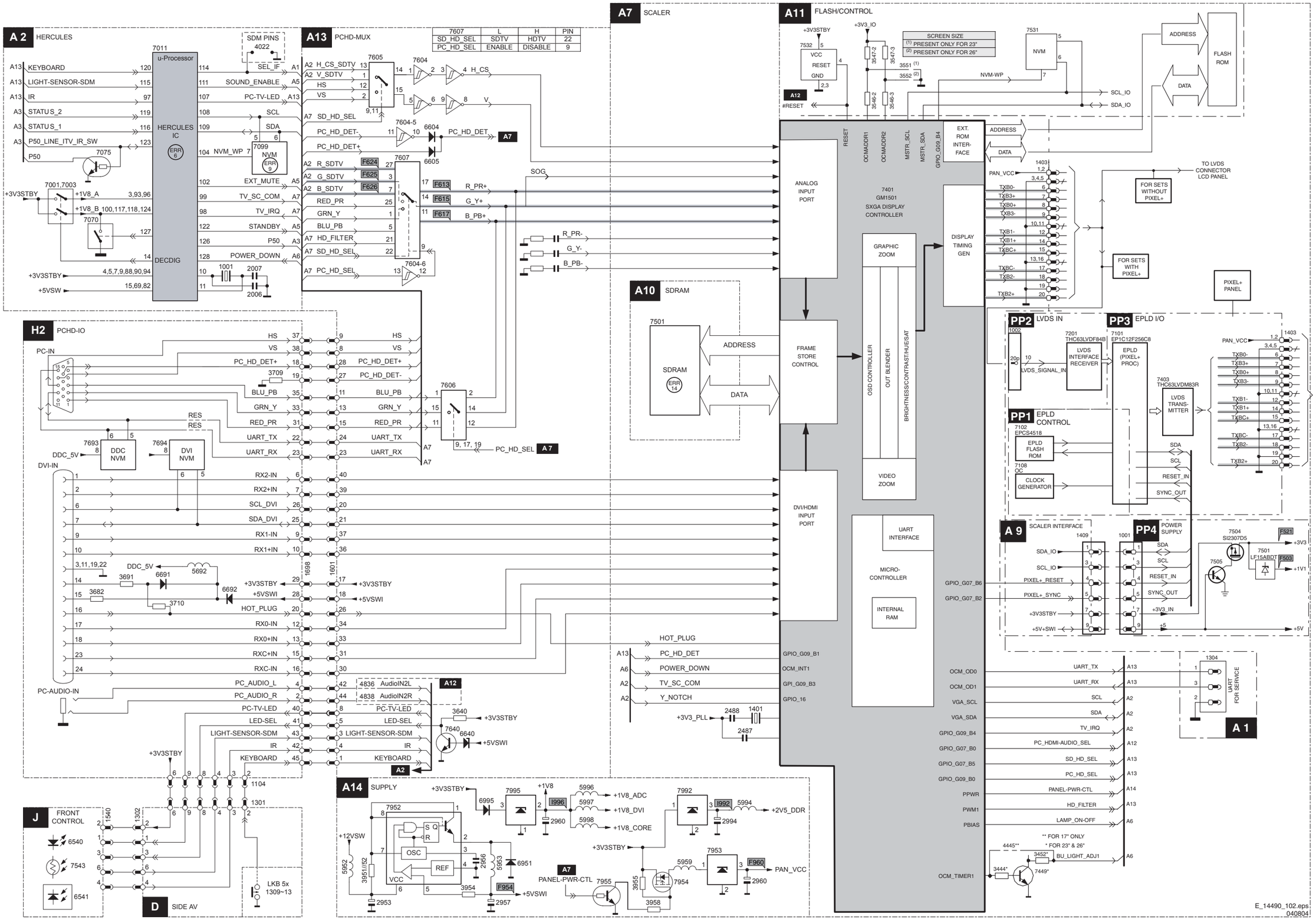
Wiring Diagram



Block Diagram Tuner and IF Video

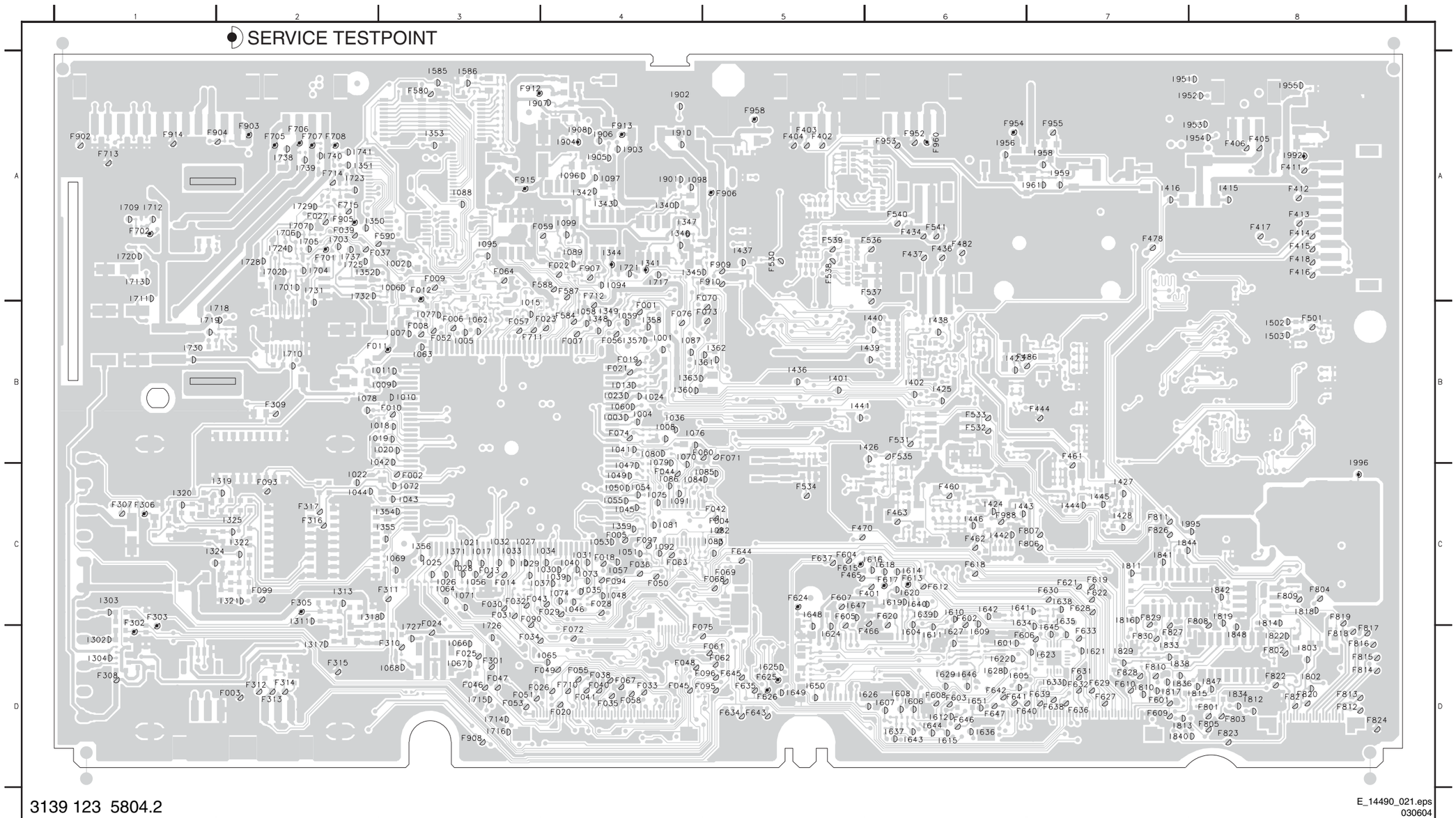


Block Diagram Scaler



Testpoint Overview TV & Scaler Board (Bottom Side)

F001 B4 F018 C4 F032 C3 F046 D3 F061 D5 F090 C3 F309 B2 F406 A8 F461 C7 F534 C5 F602 C6 F619 C7 F634 D5 F701 A2 F803 D8 F817 D8 F903 A2 F954 A6 I010 B3 I027 C3 I042 B3 I057 C4 I072 C3 I086 C4 I304 D1 I343 A4 I357 B4 I425 B6 I728 A2
F002 C3 F019 B4 F033 D4 F047 D3 F062 D5 F093 C2 F310 D3 F411 A8 F462 C6 F535 B6 F603 D6 F620 C6 F635 D5 F702 A1 F804 C8 F818 D8 F904 A2 F955 A7 I011 B3 I028 C3 I043 C3 I058 B4 I073 C4 I087 B4 I311 C2 I344 A4 I358 B4 I426 B6 I729 A2
F003 D2 F020 D4 F034 D3 F048 D4 F063 C4 F094 C4 F311 C3 F412 A8 F463 C6 F536 A6 F604 C5 F621 C7 F636 D7 F705 A2 F805 D8 F819 C8 F905 A2 F958 A5 I013 B4 I029 C3 I044 C2 I059 B4 I074 C4 I088 A3 I313 C2 I345 A5 I359 C4 I427 C7 I730 B1
F004 C5 F021 B4 F035 D4 F049 D4 F064 A3 F095 D5 F312 D2 F413 A8 F465 C5 F537 A6 F605 C5 F622 C7 F637 C5 F706 A2 F806 C7 F820 D8 F906 A5 F960 A6 I015 B3 I030 C4 I045 C4 I060 B4 I075 C4 I089 A4 I317 D2 I346 A4 I360 B4 I428 C7 I731 B2
F005 C4 F022 A4 F036 C4 F050 C4 F067 D4 F096 D5 F313 D2 F414 A8 F466 C6 F538 A5 F606 D7 F624 C5 F638 D7 F707 A2 F807 C7 F821 D8 F907 A4 F988 C6 I017 C3 I031 C4 I046 C4 I062 B3 I076 B4 I091 C4 I318 C3 I347 A4 I361 B5 I436 B5 I732 A2
F006 B3 F023 B4 F037 A2 F051 D3 F068 C5 F097 C4 F314 D2 F415 A8 F470 C5 F539 A5 F607 C5 F625 D5 F639 D7 F708 A2 F808 C8 F822 D8 F908 D3 I001 B4 I018 B3 I032 C3 I047 C4 I063 B3 I077 B3 I092 C4 I319 C2 I348 B4 I362 B5 I437 A5 I737 A2
F007 B4 F024 D3 F038 D4 F052 B3 F069 C5 F099 C2 F315 D2 F416 A8 F478 A7 F540 A6 F608 D6 F626 D5 F640 D6 F709 A5 F823 D8 F909 A5 I002 A3 I019 B3 I033 C3 I048 C4 I064 C3 I078 B2 I094 A4 I320 C1 I349 B4 I363 B4 I438 B6 I738 A2
F008 B3 F025 D3 F039 A2 F053 D3 F070 B5 F301 D3 F316 C2 F417 A8 F482 A6 F541 A6 F609 D7 F627 D7 F641 D6 F711 B3 F810 D7 F824 D8 F910 A5 I003 B4 I020 B3 I034 C4 I049 C4 I065 D4 I079 B4 I095 A3 I321 C2 I350 A2 I371 C3 I439 B6 I739 A2
F009 A3 F026 D4 F040 D4 F055 D4 F071 B5 F302 D1 F317 C2 F418 A8 F486 B6 F580 A3 F610 D7 F628 C7 F642 D6 F712 B4 F811 C7 F826 C7 F912 A3 I004 B4 I021 C3 I035 C4 I050 C4 I066 D3 I080 B4 I096 A4 I322 C2 I351 A2 I401 B5 I440 B6 I740 A2
F010 B3 F027 A2 F041 D4 F056 B4 F072 D4 F303 D1 F401 C6 F434 A6 F501 B8 F584 B4 F612 C6 F629 D7 F643 D5 F713 A1 F812 D8 F827 C7 F913 A4 I005 B3 I022 C2 I036 B4 I051 C4 I067 D3 I081 C4 I097 A4 I324 C1 I352 A2 I402 B6 I441 B5 I741 A2
F011 B3 F028 C4 F042 C5 F057 B3 F073 B5 F305 C2 F402 A5 F436 A6 F530 A5 F587 A4 F613 C6 F630 C7 F644 C5 F714 A2 F813 D8 F828 D7 F914 A1 I006 A3 I023 B4 I037 C4 I053 C4 I068 D3 I082 C5 I098 A4 I325 C2 I353 A3 I415 A8 I442 C6 I802 D8
F012 A3 F029 C4 F043 C4 F058 D4 F074 B4 F306 C1 F403 A5 F437 A6 F531 B6 F588 A4 F615 C5 F631 D7 F645 D5 F715 A2 F814 D8 F829 C7 F915 A3 I007 B3 I024 B4 I039 C4 I054 C4 I069 C3 I083 C5 I099 A4 I340 A4 I354 C3 I416 A7 I443 C6 I803 D8
F013 C3 F030 C3 F044 C4 F059 A4 F075 D4 F307 C1 F404 A5 F444 B7 F532 B6 F590 A2 F617 C6 F632 D7 F646 D6 F801 D8 F815 D8 F830 D7 F952 A6 I008 B4 I025 C3 I040 C4 I055 C4 I070 C4 I084 C5 I302 D1 I341 A4 I355 C3 I423 B6 I444 C7 I810 D7
F014 C3 F031 C3 F045 D4 F060 B5 F076 B4 F308 D1 F405 A8 F460 C6 F533 B6 F601 D7 F618 C6 F633 D7 F647 D6 F802 D8 F816 D8 F902 A1 F953 A6 I009 B3 I026 C3 I041 B4 I056 C3 I071 C3 I085 C5 I303 C1 I342 A4 I356 C3 I424 C6 I445 C7 I811 C7
I446 C6 I812 D8
I502 B8 I813 D7
I503 B8 I814 C8
I585 A3 I815 D8
I586 A3 I816 C7
I601 D6 I817 D7
I604 C6 I818 C8
I605 D6 I819 C8
I606 D6 I822 D8
I607 D6 I829 D7
I608 D6 I833 D7
I609 C6 I834 D8
I610 C6 I836 D7
I611 D6 I838 D7
I612 D6 I840 D8
I614 C6 I841 C7
I615 D6 I842 C8
I616 C6 I844 C7
I618 C6 I847 D8
I619 C6 I848 D8
I620 C6 I901 A4
I621 D7 I902 A4
I622 D6 I903 A4
I623 D7 I904 A4
I624 D5 I905 A4
I625 D5 I906 A4
I626 D6 I907 A4
I627 D6 I908 A4
I628 D6 I910 A4
I629 D6 I951 A8
I633 D7 I952 A8
I634 D7 I953 A8
I635 D7 I954 A8
I636 D6 I955 A8
I637 D6 I956 A6
I638 C7 I958 A7
I639 C6 I959 A7
I640 C6 I961 A7
I641 C7 I992 A8
I642 C6 I995 C8
I643 D6 I996 C8
I644 D6
I645 D7
I646 D6
I647 C5
I648 D5
I649 D5
I650 D5
I651 D6
I701 A2
I702 A2
I703 A2
I704 A2
I705 A2
I706 A2
I707 A2
I709 A1
I710 B2
I711 A1
I712 A1
I713 A1
I714 D3
I715 D3
I716 D3
I717 A4
I718 B2
I719 B1
I720 A1
I721 A4
I723 A2
I724 A2
I725 A2
I726 D3
I727 D3



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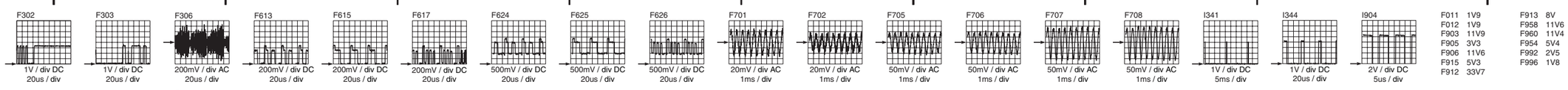
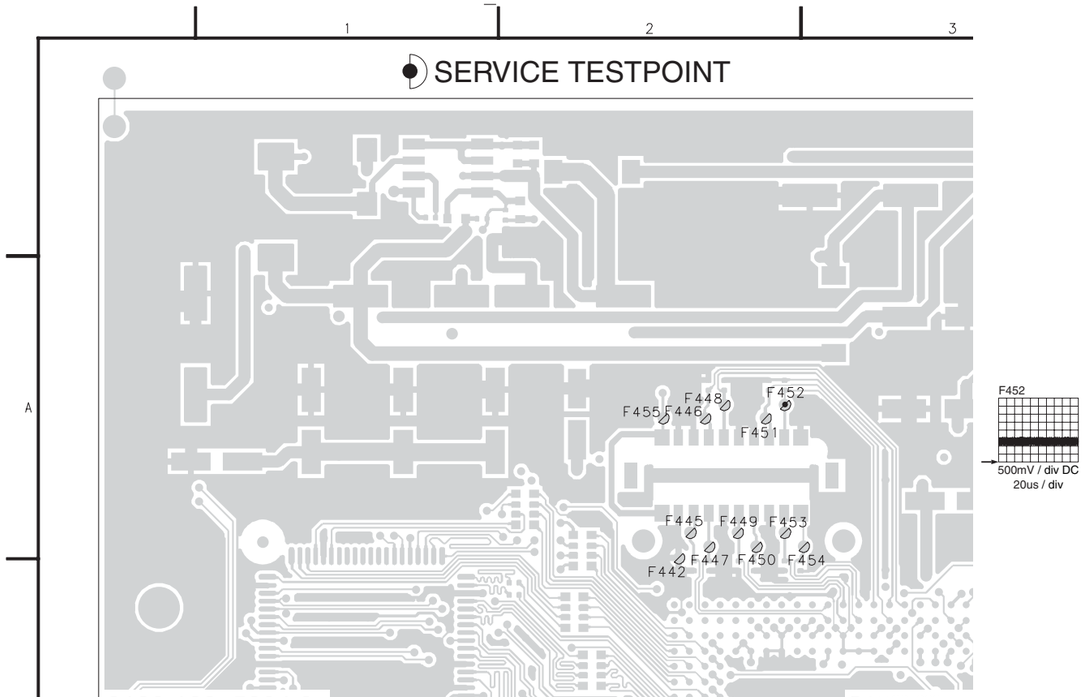

F302 1V / div DC 20us / div
F303 1V / div DC 20us / div
F306 200mV / div AC 20us / div
F613 200mV / div DC 20us / div
F615 200mV / div DC 20us / div
F617 200mV / div DC 20us / div
F624 500mV / div DC 20us / div
F625 500mV / div DC 20us / div
F626 500mV / div DC 20us / div
F701 20mV / div AC 1ms / div
F702 20mV / div AC 1ms / div
F705 50mV / div AC 1ms / div
F706 50mV / div AC 1ms / div
F707 50mV / div AC 1ms / div
F708 50mV / div AC 1ms / div
I341 1V / div DC 5ms / div
I344 1V / div DC 20us / div
I904 2V / div DC 5us / div

F305 No wafeform available

F011 1V9
F012 1V9
F903 11V9
F905 3V3
F906 11V6
F915 5V3
F912 33V7

F913 8V
F958 11V6
F960 11V4
F954 5V4
F992 2V5
F996 1V8

Testpoint Overview TV & Scaler Board (Top Side)



Personal Notes:

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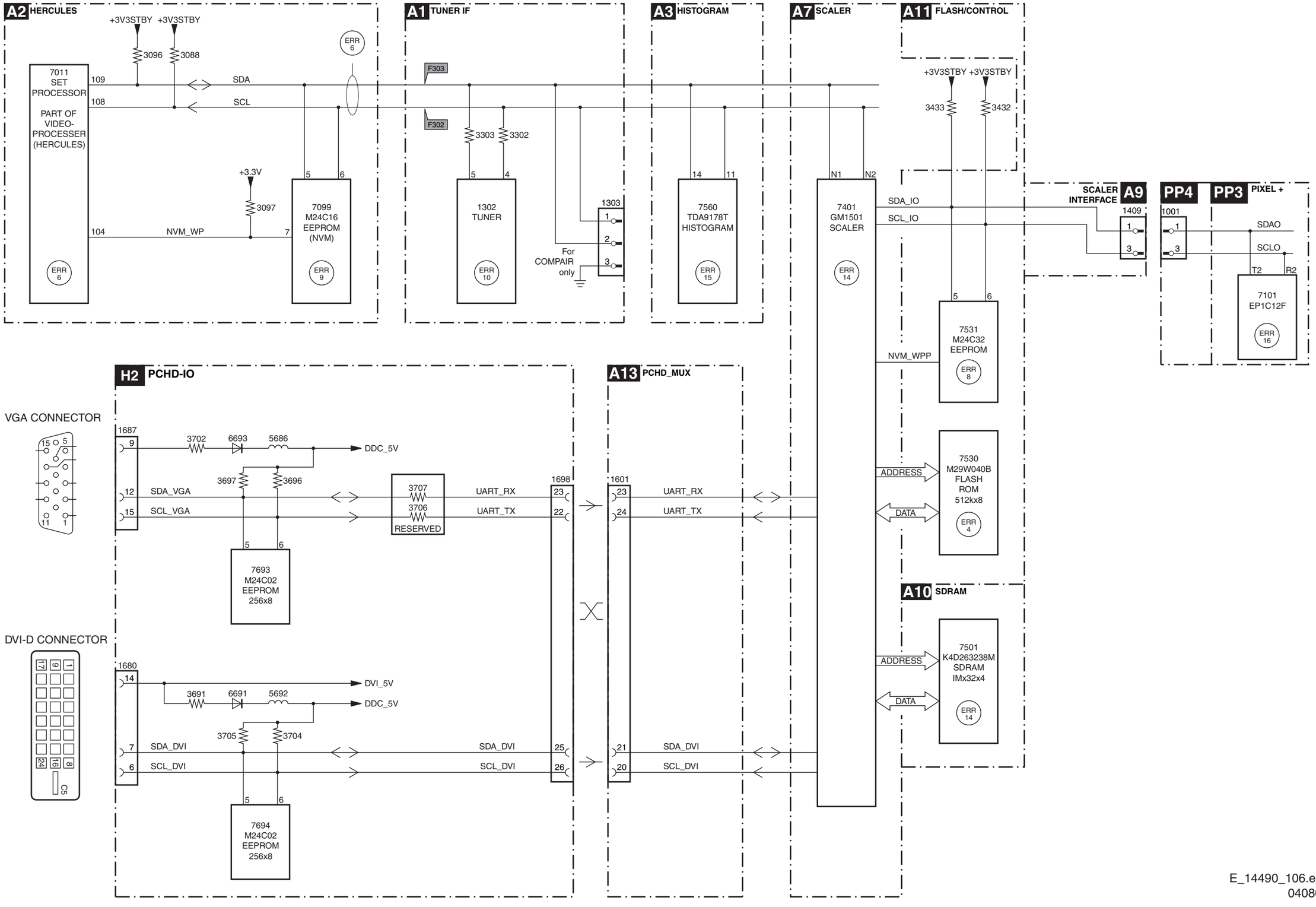
I2C IC Overview

I2C BUS INTERCONNECTION DIAGRAM



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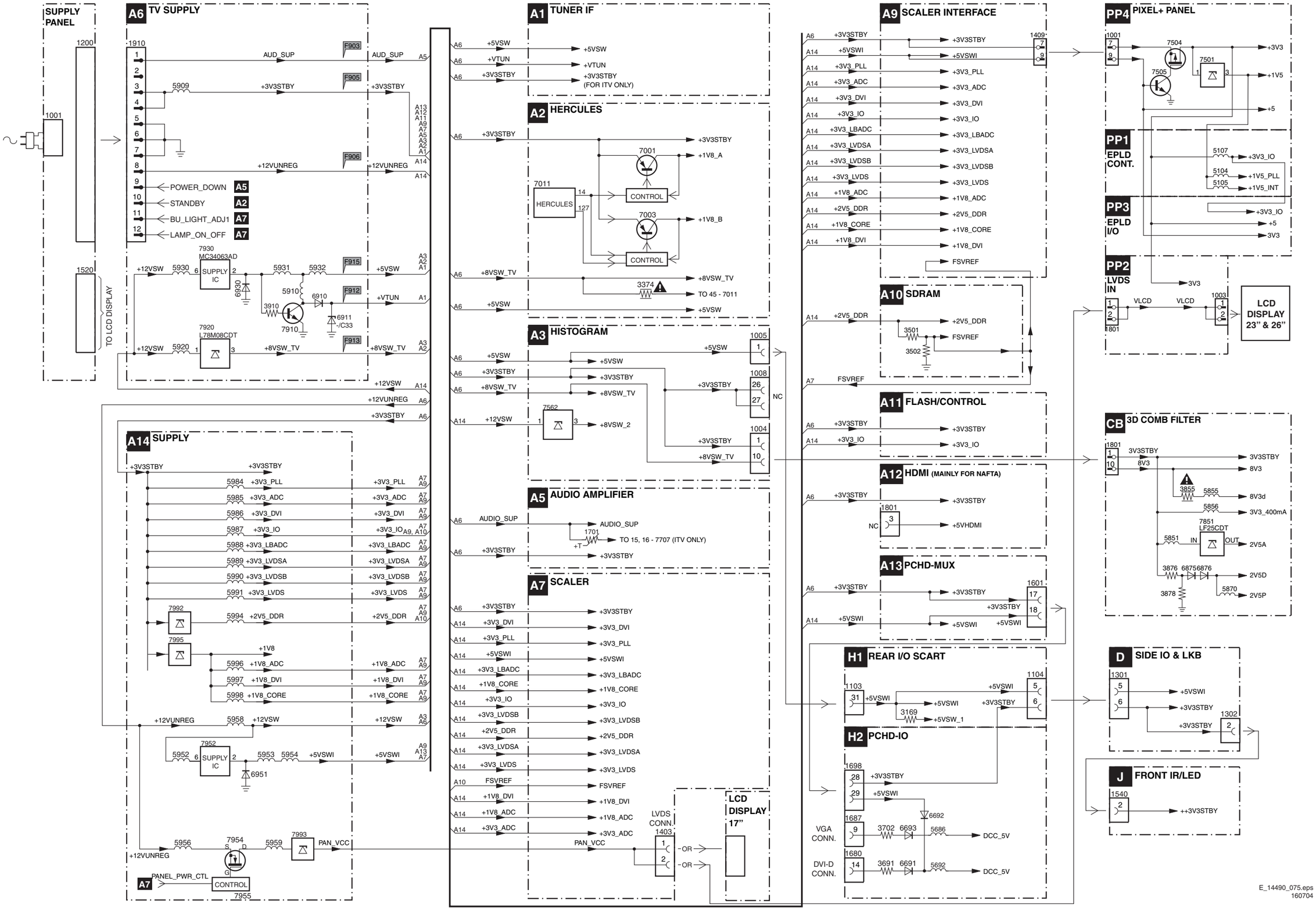
Supply Voltage Overview



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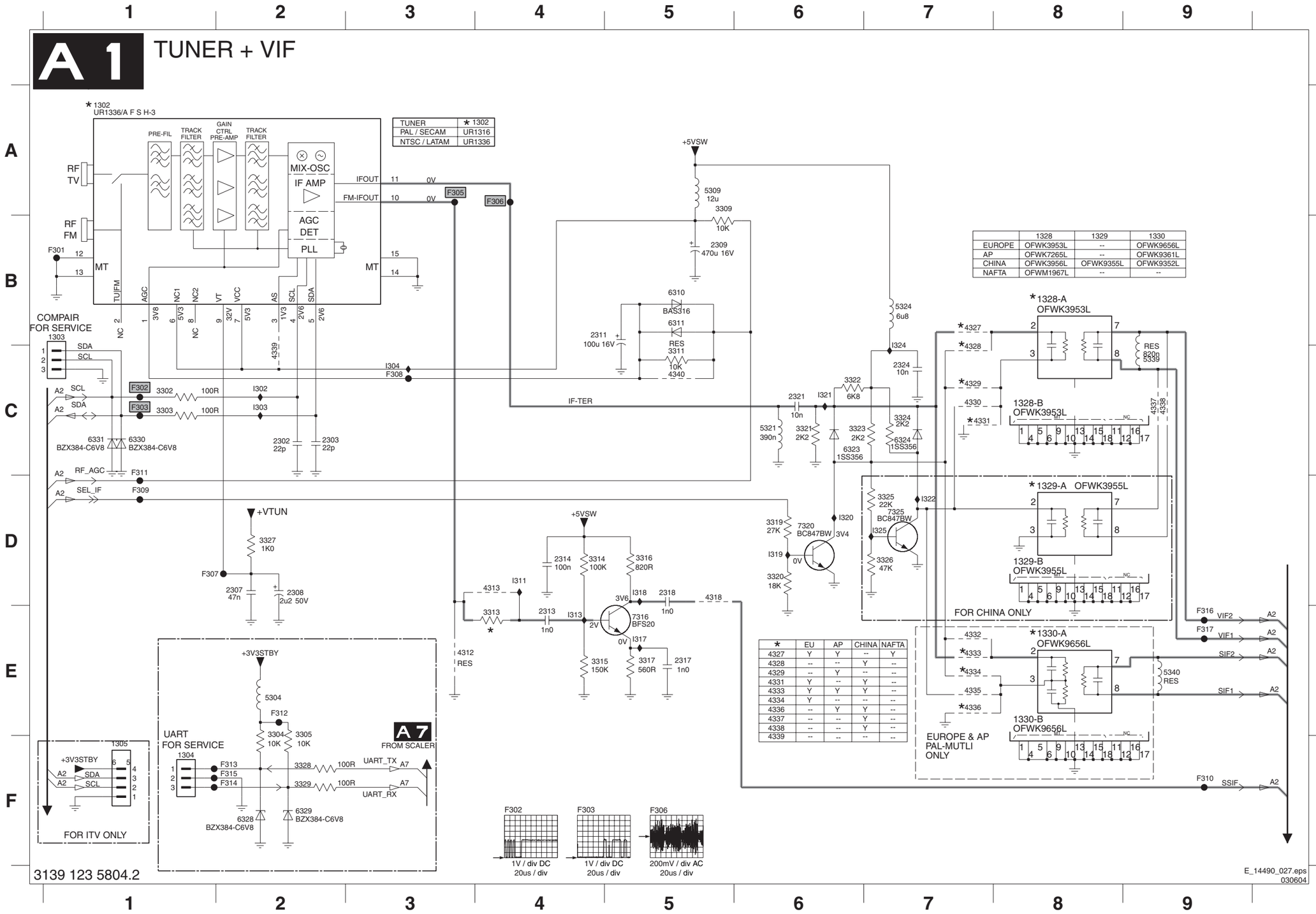
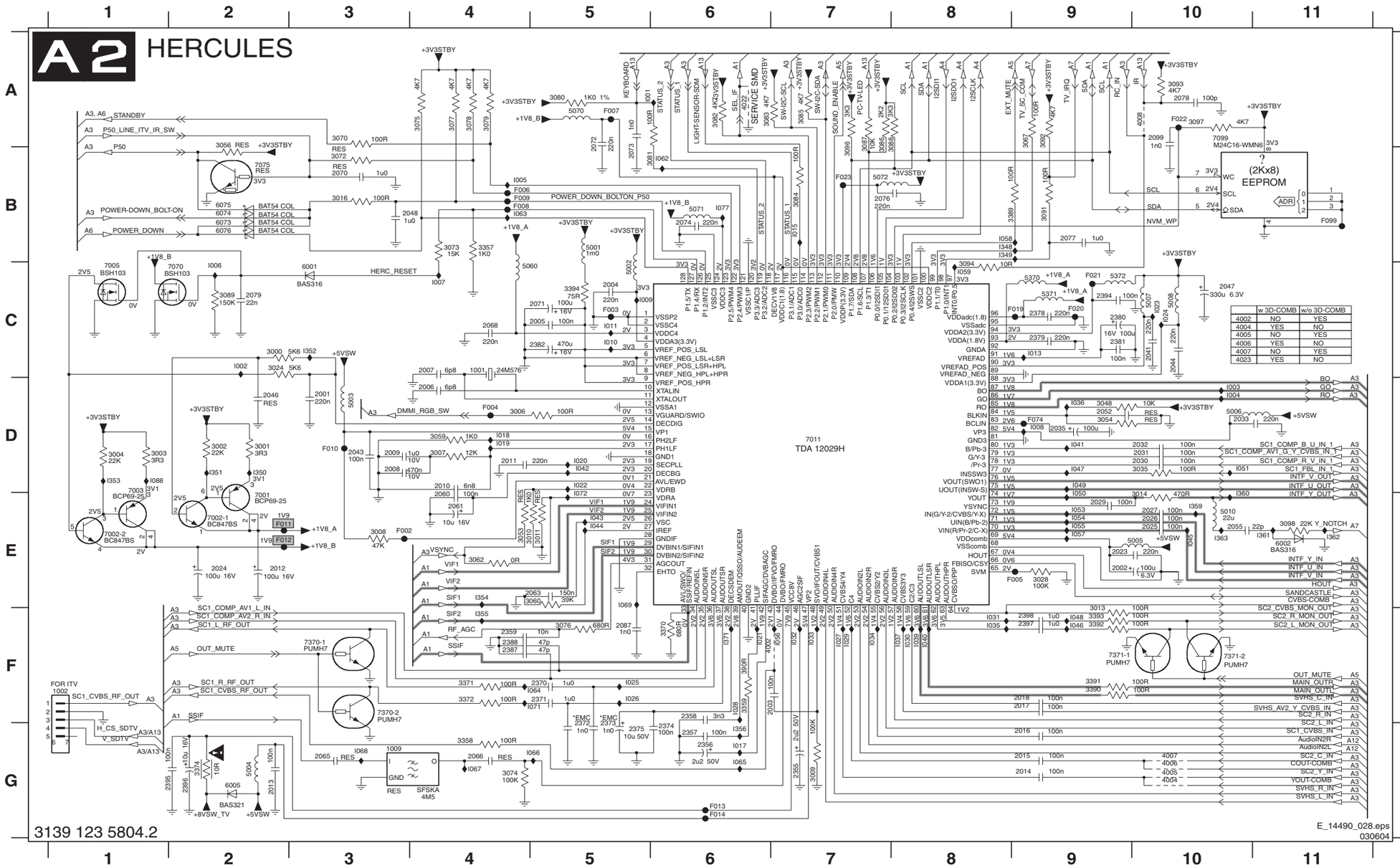
7. Circuit Diagrams and PWB Layouts

TV & Scaler Board: Tuner + VIF



1302 A1
1303 B1
1304 F1
1305 F1
1328-A B8
1328-B C8
1329-A D8
1329-B D8
1330-A E8
1330-B E8
2302 C2
2303 C2
2307 D2
2308 D2
2309 B5
2311 B4
2313 E4
2314 D4
2317 E5
2318 D5
2321 C6
2324 C7
3302 C1
3303 C1
3304 E2
3305 E2
3309 A5
3311 C5
3313 E4
3314 D4
3315 E4
3316 D5
3317 E5
3319 D6
3320 D6
3321 C6
3322 C6
3323 C6
3324 C7
3325 D7
3326 D7
3327 D2
3328 F2
3329 F2
4312 E3
4313 D4
4318 D5
4327 B7
4328 C7
4329 C7
4330 C7
4331 C7
4332 E7
4333 E7
4334 E7
4335 E7
4336 E7
4337 C9
4338 C9
4339 C2
4340 C5
5304 E2
5309 A5
5321 C6
5324 B7
5339 C9
5340 E9
6310 B5
6311 B5
6323 C6
6324 C7
6328 F2
6329 F2
6330 C1
6331 C1
7316 E5
7320 D6
7325 D7
F301 B1
F302 C1
F303 C1
F305 A3
F306 A4
F307 D1
F308 C3
F309 D1
F310 F9
F311 C1
F312 E2
F313 F2
F314 F2
F315 F2
F316 E9
F317 E9
I302 C2
I303 C2
I304 C3
I311 D4
I313 E4
I317 E5
I318 D5
I319 D6
I320 C6
I321 C6
I322 D7
I324 B7
I325 D7

TV & Scaler Board: Hercules


A2 HERCULES
3139 123 5804.2
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030604
7011
TDA 12029H
SERVICE SMD
(2Kx8)
EEPROM
M24C16-WMN6
HERC_RESET
DMMI_RGB_SW
POWER_DOWN_BOLTON_P50
STANDBY
P50_LINE_ITV_IR_SW
P50
POWER-DOWN-BOLT-ON
POWER_DOWN
OUT_MUTE
SSIF
RF_AGC
VSYNC
SC1_CVBS_RF_OUT
H_CS_SDTV
V_SDTV
SC1_COMP_AV1_L_IN
SC1_COMP_AV2_R_IN
SC1_L_RF_OUT
SC1_R_RF_OUT
SC1_CVBS_RF_OUT
FOR ITV
KEYBOARD
LIGHTSENSOR-SDM
SEL_IF
PC-TV-LED
SOUND_ENABLE
SW-I2C-SCL
SW-I2C-SDA
EXT_MUTE
TV_SC_COM
TV_IRQ
RC_IN
IR
SCL
SDA
NVM_WP
ADR
SVHS_AV2_Y_CVBS_IN
SC1_COMP_B_U_IN_1
SC1_COMP_AV1_G_Y_CVBS_IN_1
SC1_COMP_R_V_IN_1
SC1_FBL_IN_1
INTF_V_OUT
INTF_U_OUT
INTF_Y_OUT
Y_NOTCH
SC2_CVBS_MON_OUT
SC2_R_MON_OUT
SC2_L_MON_OUT
MAIN_OUT_L
MAIN_OUT_R
SVHS_C_IN
SC2_R_IN
SC2_L_IN
SC1_CVBS_IN
AudioIN2R
AudioIN2L
SC2_C_IN
COUT-COMB
SC2_Y_IN
YOUT-COMB
SVHS_R_IN
SVHS_L_IN
HOUT
SANDCASTLE
CVBS-COMB
VSSadc
VDDA(1.8V)
VREFAD
VREFAD_POS
VREFAD_NEG
VDDA1(3.3V)
BLKIN
BCLIN
INSSWS
VOUT(SWO1)
UOUT(INSW-S)
YOUT
YSYNC
VDDcomb
VSScomb
HOUT
FBISO/CSY
SVM
VSSP2
VSSC4
VDDC4
VDDA3(3.3V)
VREF_POS_LSL
VREF_NEG_LSL+LSR
VREF_POS_LSR+HPL
VREF_NEG_HPL+HPR
VREF_POS_HPR
XTALIN
XTALOUT
VSSA1
VGUARD/SWIO
DECDIG
VP1
PH2LF
PH1LF
GND1
SECPLL
DECBG
AVL/EWD
VDRB
VDRA
VIFIN1
VIFIN2
VSC
IREF
GNDIF
DVBIN1/SIFIN1
DVBIN2/SIFIN2
AGCOUT
EHTO
SIF1
SIF2
GND2
PLLIF
SIFAGC/DVBAGC
DVBQ/IFVO/HMO
DVBI/FMRO
VCC8V
AGC2SIF
VP2
SVO/IFOUT/CVBS1
AV1/SVO
SSIF/REFIN
AUDIOIN5R
AUDIOIN5L
AUDIOIN4R
AUDIOIN4L
CVBS4/Y4
C4
AUDIOIN2L
AUDIOIN2R
CVBS2/Y2
AUDIOIN3L
AUDIOIN3R
CVBS3/Y3
C2/C3
AUDOUTLSL
AUDOUTLSR
AUDOUTHPL
AUDOUTHPR
CVBSO/PR
SCART
PUMH7
BSH103
BCP69-25
BC847BS
BAS316
BAS321
TUNER
SFSKA 4M5
RES
+3V3STBY
+1V8_A
+1V8_B
+5VSW
+8VSW_TV
3V3
2V5
1V9
0V
2V
F002
F003
F004
F009
F010
F011
F012
F013
F014
F020
F021
F022
F023
F099
I001
I002
I005
I006
I007
I009
I010
I011
I025
I026
I062
I063
I069
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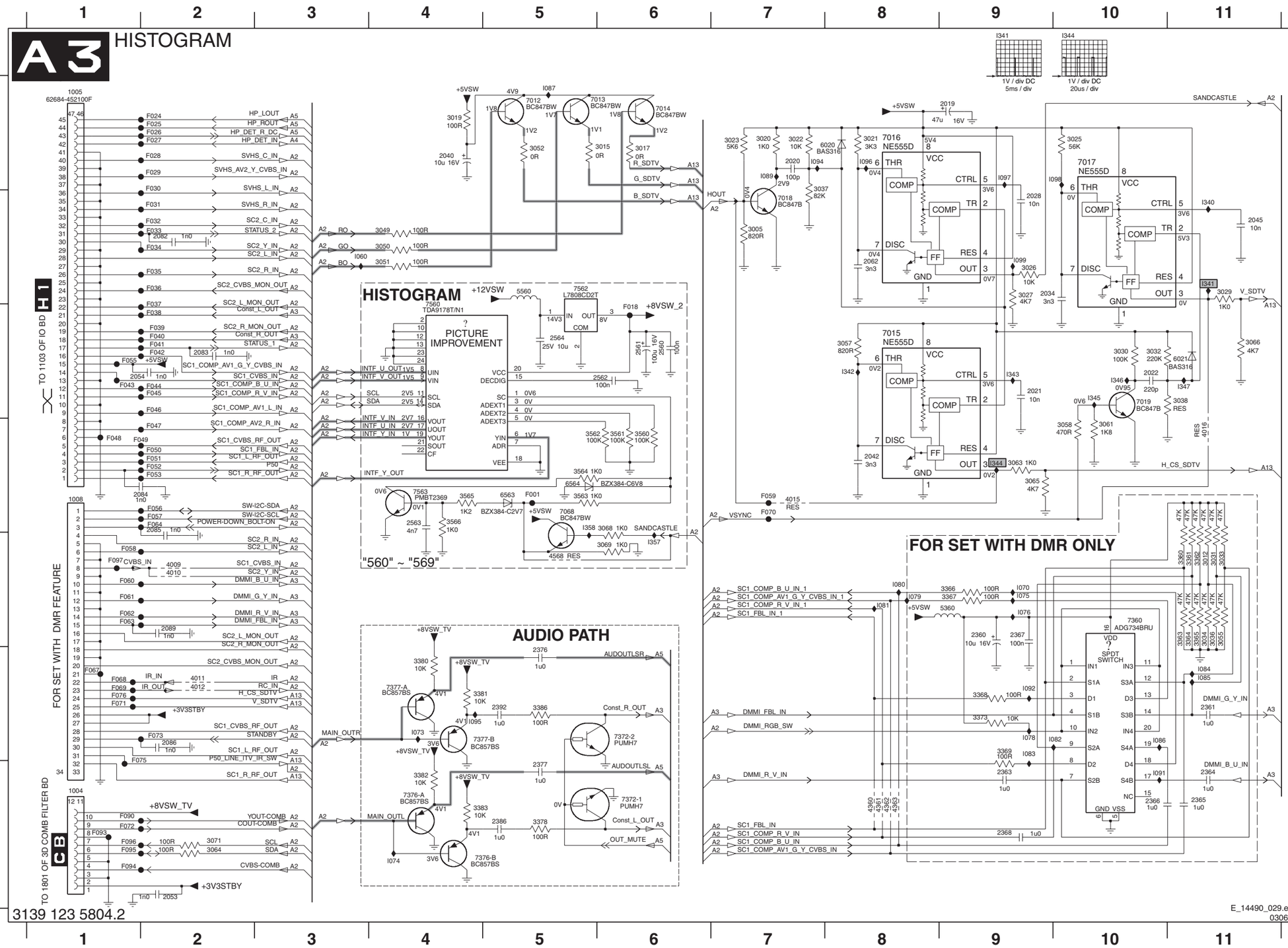
I401
I402
I403
I404

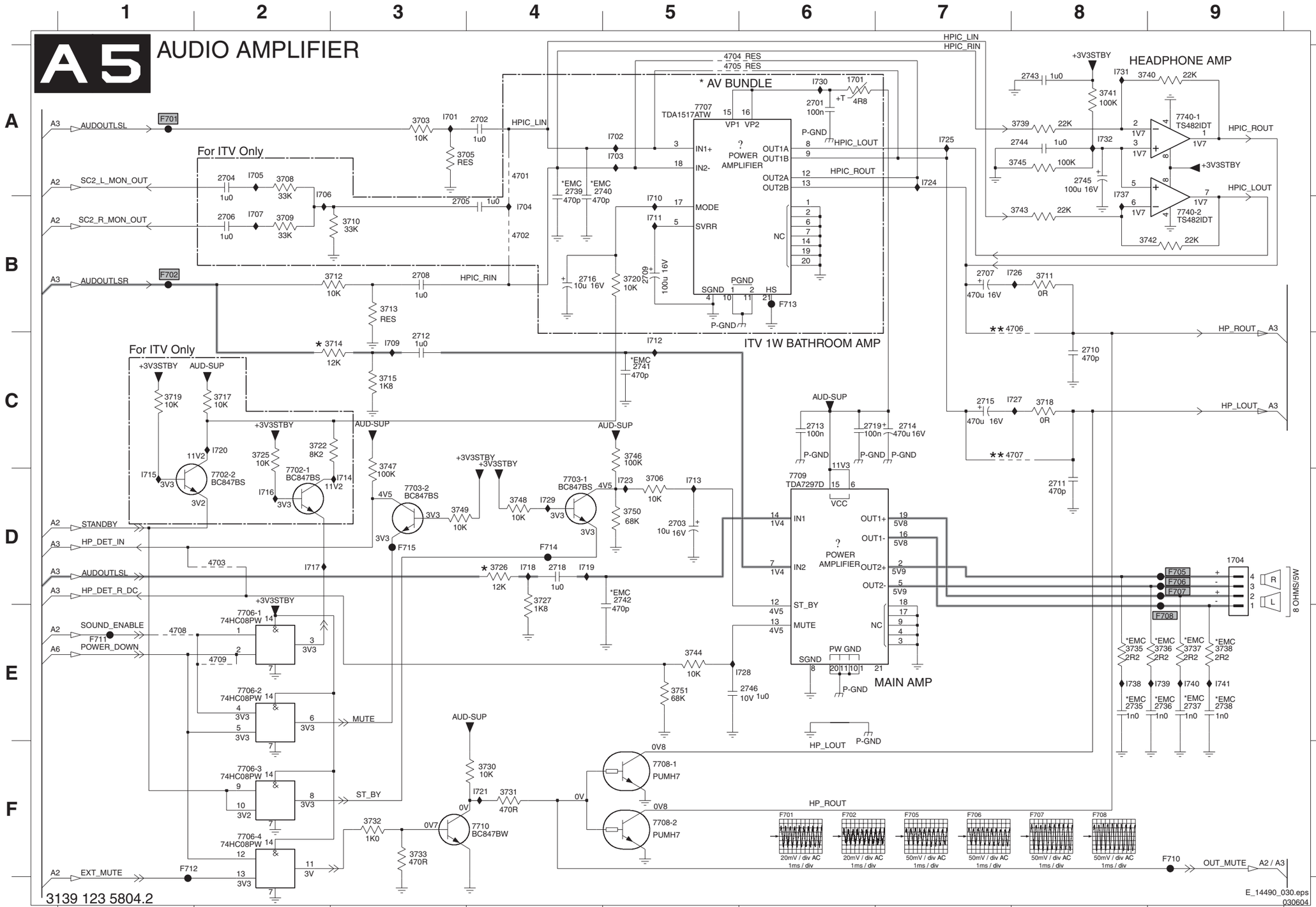
TV & Scaler Board: Histogram



1004 G1	3562 D5	F093 G1
1005 A1	3563 D5	F094 G1
1008 D1	3564 D5	F095 G1
2019 A9	3565 D4	F096 G1
2020 A7	3566 D4	F097 E1
2021 C9	4009 E2	I060 B3
2022 C10	4010 E2	I070 E9
2028 B9	4011 F2	I073 F4
2034 B9	4012 F2	I074 G4
2040 A4	4015 D7	I075 E9
2042 D8	4016 D11	I076 E9
2045 B11	4360 G8	I078 F9
2053 G2	4361 G8	I079 E8
2054 C1	4362 G8	I080 E8
2062 B8	4363 G8	I081 E8
2082 B2	4568 E5	I082 F10
2083 C2	5360 E9	I083 F9
2084 D2	5560 B5	I084 F11
2085 D2	6020 A8	I085 F11
2086 F2	6021 C11	I086 F10
2089 E2	6563 D5	I087 A5
2360 E9	6564 D5	I089 A7
2361 F11	7012 A5	I091 G10
2363 G9	7013 A5	I092 F9
2364 G11	7014 A6	I094 A7
2365 G11	7015 C8	I095 F4
2366 G10	7016 A8	I096 A8
2367 E9	7017 A10	I097 A9
2368 G9	7018 B7	I098 A10
2376 F5	7019 C10	I099 B9
2377 G5	7068 D5	I340 B11
2386 G5	7360 E10	I341 B11
2392 F5	7372-1 G6	I342 C8
2560 C6	7372-2 F6	I343 C9
2561 C6	7376-A G4	I344 D9
2562 C6	7376-B G4	I345 C10
2563 D4	7377-A F4	I346 C10
2564 C5	7377-B F4	I347 C11
3005 B7	7560 C4	I357 E6
3012 E11	7562 B5	I358 D5
3015 A6	7563 D4	
3017 A6	F001 D5	
3019 A4	F018 C6	
3020 A7	F024 A2	
3021 A8	F025 A2	
3022 A7	F026 A2	
3023 A7	F027 A2	
3025 A10	F028 A2	
3026 B9	F029 A2	
3027 B9	F030 B2	
3029 B11	F031 B2	
3030 C10	F032 B2	
3031 E11	F033 B2	
3032 C10	F034 B2	
3033 E11	F035 B2	
3034 E11	F036 B2	
3036 E11	F037 C2	
3037 A7	F038 C2	
3038 C11	F039 C2	
3049 B4	F040 C2	
3050 B4	F041 C2	
3051 B4	F042 C2	
3052 A5	F043 C1	
3055 E11	F044 C2	
3057 C8	F045 C2	
3058 D10	F046 C2	
3061 D10	F047 D2	
3063 D9	F048 D1	
3064 G2	F049 D2	
3065 D9	F050 D2	
3066 C11	F051 D2	
3068 D6	F052 D2	
3069 E6	F053 D2	
3071 G2	F055 C1	
3360 E11	F056 D2	
3361 E11	F057 D2	
3362 E11	F058 E1	
3363 E11	F059 D7	
3364 E11	F060 E1	
3365 E11	F061 E1	
3366 E9	F062 E1	
3367 E9	F063 E1	
3368 F9	F064 D2	
3369 F9	F067 F1	
3373 F9	F068 F1	
3378 G5	F069 F1	
3380 F4	F070 D7	
3381 F4	F071 F1	
3382 G4	F072 G1	
3383 G4	F073 F2	
3386 F5	F075 G1	
3560 D6	F076 F1	
3561 D6	F090 G1	

TV & Scaler Board: Audio Amplifier

A5 AUDIO AMPLIFIER



1701 A6 7706-4 F2
1704 D9 7707 A5
2701 A6 7708-1 F5
2702 A4 7708-2 F5
2703 D5 7709 D6
2704 A2 7710 F4
2705 B3 7740-1 A9
2706 B2 7740-2 B9
2707 B7 F701 A1
2708 B3 F702 B1
2709 B5 F705 D9
2710 C8 F706 D9
2711 D8 F707 D9
2712 C3 F708 E9
2713 C6 F710 F9
2714 C7 F711 E1
2715 C7 F712 F1
2716 B4 F713 B6
2718 D4 F714 D4
2719 C6 F715 D3
2735 E8 I701 A3
2736 E9 I702 A5
2737 E9 I703 A5
2738 E9 I704 B4
2739 A4 I705 A2
2740 A5 I706 A2
2741 C5 I707 B2
2742 D5 I709 C3
2743 A8 I710 B5
2744 A8 I711 B5
2745 A8 I712 C5
2746 E6 I713 D5
3703 A3 I714 D3
3705 A3 I715 D1
3706 D5 I716 D2
3708 A2 I717 D2
3709 B2 I718 D4
3710 B3 I719 D4
3711 B8 I720 C2
3712 B3 I721 F4
3713 B3 I723 D5
3714 C3 I724 A7
3715 C3 I725 A7
3717 C2 I726 B8
3718 C8 I727 C8
3719 C1 I728 E6
3720 B5 I729 D4
3722 C2 I730 A6
3725 C2 I731 A8
3726 D4 I732 A8
3727 D4 I737 A8
3730 F4 I738 E8
3731 F4 I739 E9
3732 F3 I740 E9
3733 F3 I741 E9
3735 E8
3736 E9
3737 E9
3738 E9
3739 A8
3740 A8
3741 A8
3742 B9
3743 B8
3744 E5
3745 A8
3746 C5
3747 D3
3748 D4
3749 D3
3750 D5
3751 E5
4701 A4
4702 B4
4703 D2
4704 A5
4705 A5
4706 B8
4707 C8
4708 E1
4709 E2
7702-1 D2
7702-2 D2
7703-1 D4
7703-2 D3
7706-1 E2
7706-2 E2
7706-3 F2

TV & Scaler Board: TV-Supply

A6 TV-SUPPLY

TO / FROM 1200 OF POWER SUPPLY UNIT
1910
11V9 F903 11V2 AUD-SUP
2936 1n0
F904 P-GND
5909
3V3 F905 3V3 (1V2) +3V3STBY
F914
11V6 F906 14V4 +12VUNREG
F907 (0V) 3V3 POWER_DOWN A2, A5, A7
F908 (0V) 3V2 STANDBY A2
F909 (3V3) 3V3 BU_LIGHT_ADJ1 A14
F910 (3V3) 3V3 LAMP_ON-OFF A14
2937 1n0 2938 1n0 2939 1n0 2940 1n0 2941 1n0 2942 1n0 2909 330u 16V
F902 N.C. BU_LIGHT_ADJ2 A14

7930 MC34063AD
8 DCOL
S Q R
IPK OSC
REFERENCE REGULATOR
1 14V2 SWC
SWE 2 1V
SWE I905
TIMC 3
I904
2V / div DC
5us / div
3910 2K2
0V7
2931 470p
5931 220u
6930 SS14
SUP_GND
14V2 I901 7 IS
3930 1R0
3931 1R0
+12VSW
5930 10u
I902
14V2 6 VCC
2930 470u 16V
3932 1K0 1%
I903 1V2 5 CIN_NEG
GND 4 GND
2932 RES
3933 3K3 1%
2934 4n7
5V4
2933 470u 16V
I906
5V3 F915 +5VSW
5932 10u
2935 470u 16V
33V7 F912 +VTUN
5910 1m0
I907
6910 BAV99
2911 22u 35V
6911 BZX384-C33
TUN_GND
I908 0V3
7910 BC817-25
3911 1K0
2910 470p
8V F913 +8VSW_TV
7920 L78M08CDT
5920
I910
1 14V3 IN OUT 3 7V9
COM 2
2920 47u 16V
2921 47u 16V

(..V) STANDBY

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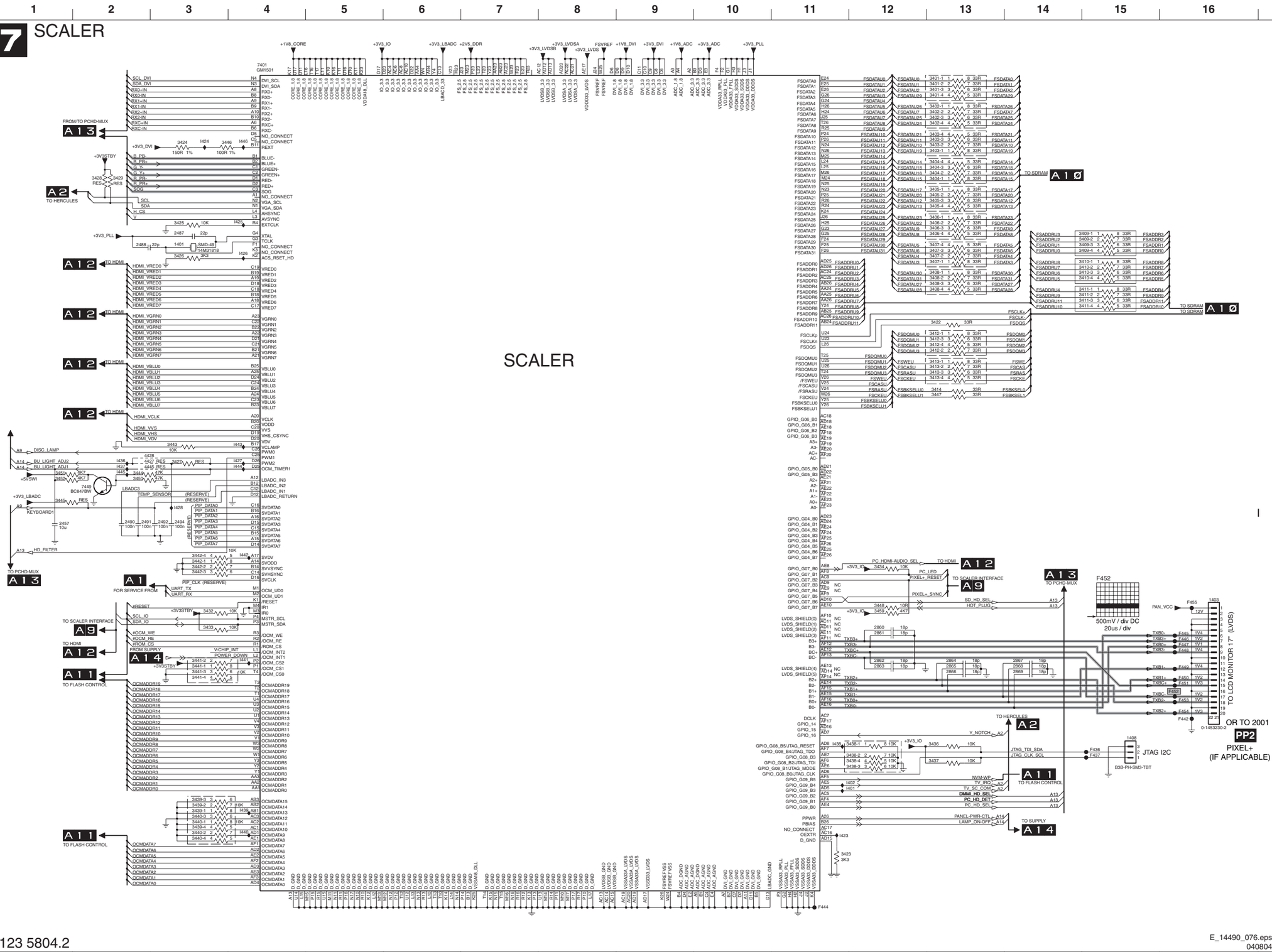
1910 A1
2909 B3
2910 E8
2911 D9
2920 E4
2921 E5
2930 C3
2931 C6
2932 C4
2933 D6
2934 D4
2935 C8
2936 A2
2937 B1
2938 B2
2939 B2
2940 B2
2941 B2
2942 B3
3910 B7
3911 E7
3930 B3
3931 B4
3932 C4
3933 C4
5909 A2
5910 D8
5920 E3
5930 C3
5931 C6
5932 C8
6910 D8
6911 D9
6930 C7
7910 D7
7920 E4
7930 B5
F902 B3
F903 A2
F904 A2
F905 A2
F906 A2
F907 A2
F908 A2
F909 A2
F910 B2
F912 D9
F913 E9
F914 A1
F915 C9
I901 B4
I902 C3
I903 C4
I904 B7
I905 C6
I906 C7
I907 D8
I908 D7
I910 E3

TV & Scaler Board: Scaler

A7 SCALER

SCALER



1401 C3 I436 F2
1403 H16 I437 F2
1408 J15 I438 J11
2457 G1 I439 K4
2487 C3 I440 K4
2488 C2 I441 I4
2490 G2 I442 G4
2491 G2 I443 F4
2492 G3 I444 F4
2494 G3 I445 F2
2860 H12 I446 B4
2861 H12
2862 I12
2863 I12
2864 I13
2865 I13
2866 I13
2867 I14
2868 I14
2869 I14
3401-1 A13
3401-2 A13
3401-3 A13
3401-4 A13
3402-1 B13
3402-2 B13
3402-3 B13
3402-4 B13
3403-1 B13
3403-2 B13
3403-3 B13
3403-4 B13
3404-1 C13
3404-2 B13
3404-3 B13
3404-4 B13
3405-1 C13
3405-2 C13
3405-3 C13
3405-4 C13
3406-1 C13
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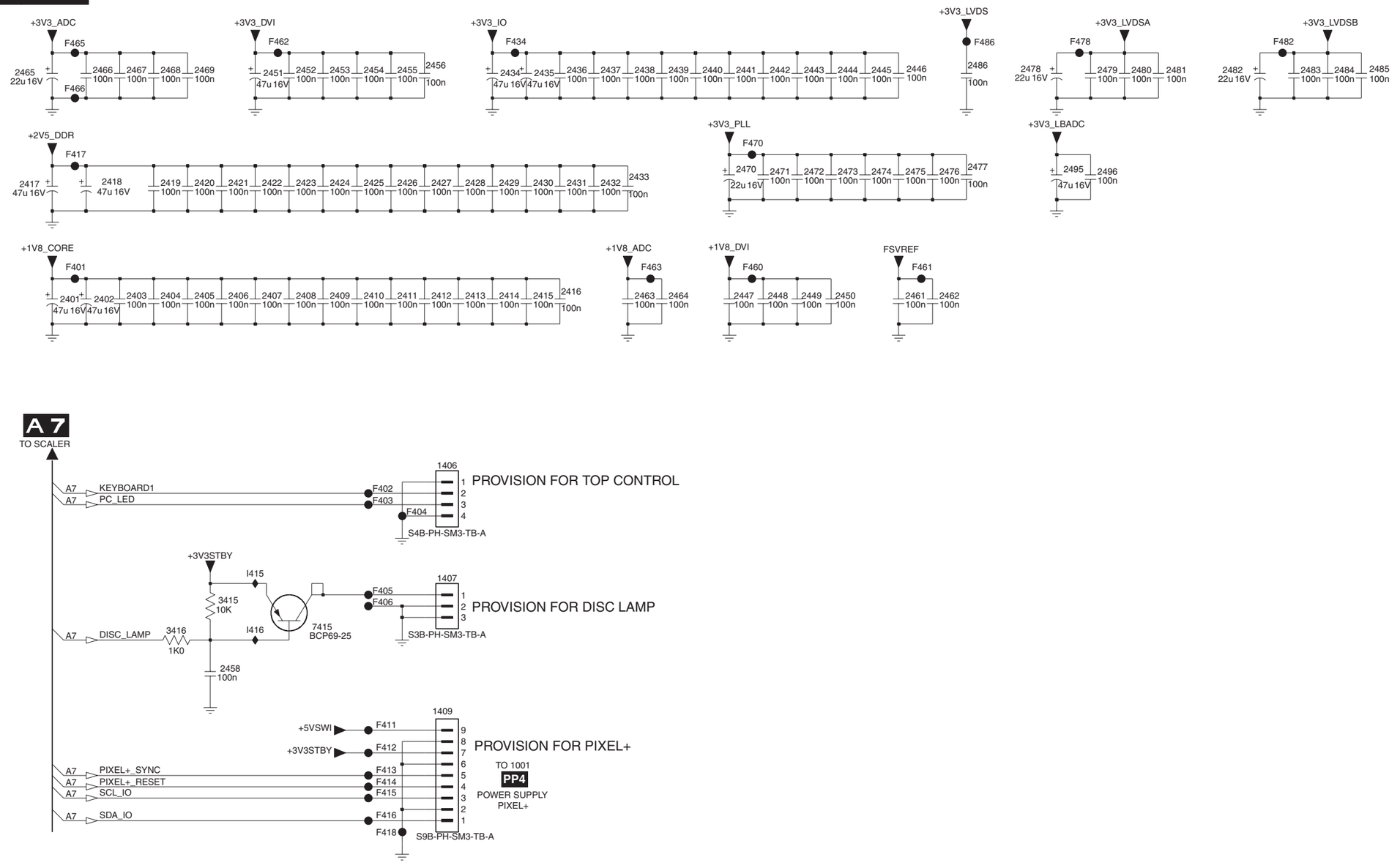
3406-4 C13
3407-1 D13
3407-2 D13
3407-3 C13
3407-4 C13
3408-1 D13
3408-2 D13
3408-3 D13
3408-4 D13
3409-1 C15
3409-2 C15
3409-3 C15
3409-4 C15
3410-1 D15
3410-2 D15
3410-3 D15
3410-4 D15
3411-1 D15
3411-2 D15
3411-3 D15
3411-4 D15
3412-1 E13
3412-2 E13
3412-3 E13
3412-4 E13
3413-1 E13
3413-2 E13
3413-3 E13
3413-4 E13
3414 E13
3422 D13
3423 K11
3424 B3
3425 C3
3426 D3
3427 F3
3428 C2
3429 C2
3432 H3
3433 H3
3434 H12
3436 J13
3437 J13
3438-1 J12
3438-2 J12
3438-3 J12
3438-4 J12
3439-1 K3
3439-2 K3
3439-3 K3
3439-4 K3
3440-1 K3
3440-2 K3
3440-3 K3
3440-4 K3
3441-1 I3
3441-2 I3
3441-3 I3
3441-4 I3
3442-1 G3
3442-2 H3
3442-3 H3
3442-4 G3
3443 F3
3444 F2
3445 G1
3446 B3
3447 E13
3448 H12
3450 F2
3451 F1
3452 F1
3459 H12
4427 F2
4428 F2
4445 F2
7401 A4
7449 G2
F436 J15
F437 J15
F442 J16
F444 L11
F445 H16
F446 H16
F447 I16
F448 I16
F449 I16
F450 I16
F451 I16
F452 I16
F453 I16
F454 I16
F455 H16
I423 K11
I424 B3
I425 C4
I426 C4
I427 F4
I428 G3

TV & Scaler Board: Scaler Interface

A9 SCALER INTERFACE



3139 123 5804.2

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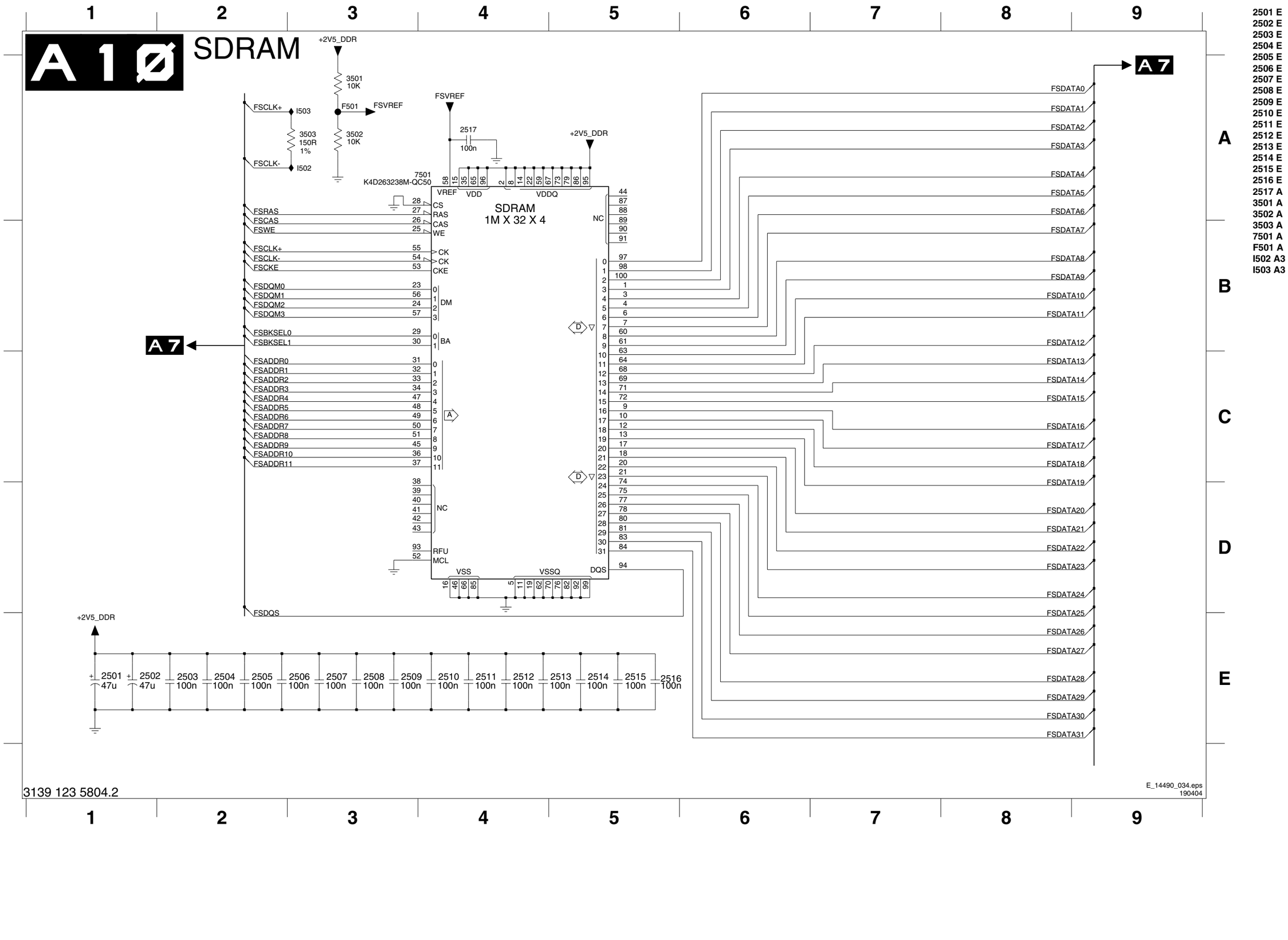
1406 C4	2470 A5
1407 D4	2471 A6
1409 E4	2472 A6
2401 B1	2473 A6
2402 B1	2474 A6
2403 B2	2475 A6
2404 B2	2476 A7
2405 B2	2477 A7
2406 B2	2478 A7
2407 B2	2479 A8
2408 B3	2480 A8
2409 B3	2481 A8
2410 B3	2482 A9
2411 B3	2483 A9
2412 B3	2484 A9
2413 B4	2485 A9
2414 B4	2486 A7
2415 B4	2495 A7
2416 B4	2496 A8
2417 A1	3415 D2
2418 A1	3416 D2
2419 A2	7415 D3
2420 A2	F401 B1
2421 A2	F402 C3
2422 A2	F403 C3
2423 A3	F404 C3
2424 A3	F405 D3
2425 A3	F406 D3
2426 A3	F411 E3
2427 A3	F412 E3
2428 A4	F413 E3
2429 A4	F414 E3
2430 A4	F415 E3
2431 A4	F416 E3
2432 A5	F417 A1
2433 A5	F418 E3
2434 A4	F434 A4
2435 A4	F460 B5
2436 A4	F461 B7
2437 A5	F462 A2
2438 A5	F463 B5
2439 A5	F465 A1
2440 A5	F466 A1
2441 A5	F470 A5
2442 A6	F478 A8
2443 A6	F482 A9
2444 A6	F486 A7
2445 A6	I415 D2
2446 A7	I416 D2
2447 B5	
2448 B6	
2449 B6	
2450 B6	
2451 A2	
2452 A3	
2453 A3	
2454 A3	
2455 A3	
2456 A3	
2458 D2	
2461 B6	
2462 B7	
2463 B5	
2464 B5	
2465 A1	
2466 A1	
2467 A2	
2468 A2	
2469 A2	

TV & Scaler Board: SDRAM



3139 123 5804.2

TV & Scaler Board: Flash / Control

A11 FLASH / CONTROL

A7

PANEL SIZE	Model & Source	Resistor Item No 3550	3553	3552	3551	3549
17 inch	LC171W03 (LPL S-IPS)	---	---	---	---	---
17 inch	M170XW01 (AUO P-MVA)	---	---	---	---	YES
23 inch	LC230W01 (LPL S-IPS)	---	---	---	YES	
23 inch	QD23WLO1 (QDI QSV)	---	---	---	YES	YES
26 inch	LC260W01 (LPL S-IPS)	---	---	YES	---	---

See Diversity Table Above For LCD Screen Size & Type Selection

7530 M29W040B-55K1 ROM 512Kx8 [FLASH]

7531 M24C32-WMN6T (4Kx8) EEPROM

7532 NE56610-27

1530 FOR TESTING USE

1532 SKQR

1530 C7
1532 E4
2530 A3
2531 D2
2532 D4
2533 A3
3531 D2
3532 E4
3533 E6
3534 D6
3536 B7
3538-1 C5
3538-2 C5
3538-3 C5
3538-4 C5
3539-1 C5
3539-2 C5
3539-3 C5
3539-4 C5
3540-1 B6
3540-2 B6
3540-3 B6
3540-4 B6
3541 C6
3542 C6
3543 C7
3544-1 B5
3544-2 B5
3544-3 B5
3544-4 B5
3545-1 B5
3545-2 B5
3545-3 B5
3545-4 B5
3546-1 B5
3546-2 B5
3546-3 B5
3546-4 B5
3547-1 A5
3547-2 A6
3547-3 A6
3547-4 A6
3548 A6
3549 A6
3550 A6
3551 A6
3552 A6
3553 A6
5530 A2
7530 A2
7531 D3
7532 E5
F530 A2
F531 E2
F532 E2
F533 E2
F534 E4
F535 E5
F536 B7
F537 B6
F538 C6
F539 C6
F540 B7
F541 C7

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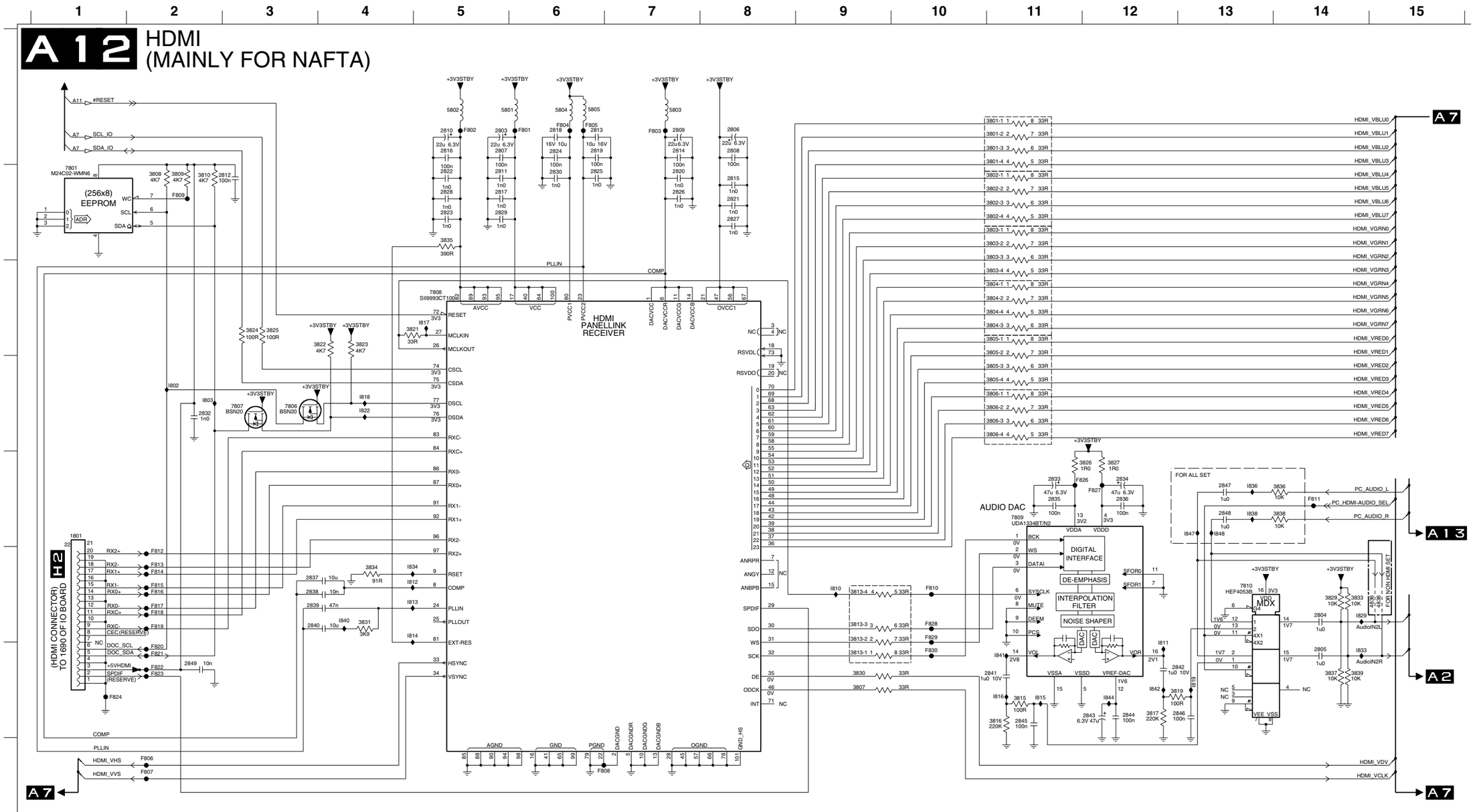
TV & Scaler Board: HDMI

1801 E1	2808 A8	2814 A7	2820 B7	2826 B7	2833 E11	2839 F3	2845 G11	3801-2 A11	3802-4 B11	3804-2 C11	3805-4 D11	3808 B2	3813-4 F9	3822 C4	3829 F14	3836 E14	5801 A5	7806 D3	F802 A5	F808 H6	F814 F2	F820 G2	F827 E12	I810 F9	I816 G11	I833 G14	I842 G12
2803 A5	2809 A7	2815 B8	2821 B8	2827 B8	2834 E12	2840 F3	2846 G13	3801-3 A11	3803-1 B11	3804-3 C11	3806-1 D11	3809 B2	3815 G11	3823 C4	3830 G9	3837 G14	5802 A5	7807 D3	F803 A7	F809 B2	F815 F2	F821 G2	F828 F10	I811 G12	I817 C5	I834 F4	I844 G12
2804 F14	2810 A5	2816 A5	2822 B5	2828 B5	2835 E11	2841 G11	2847 E13	3801-4 A11	3803-2 B11	3804-4 C11	3806-2 D11	3810 B2	3816 G11	3824 C3	3831 F4	3838 E14	5803 A7	7808 C5	F804 A6	F810 F10	F816 F2	F822 G2	F829 F10	I812 F4	I818 D4	I836 E13	I847 E13
2805 G14	2811 B5	2817 B5	2823 B5	2829 B5	2836 E12	2842 G13	2848 E13	3802-1 B11	3803-3 B11	3805-1 C11	3806-3 D11	3813-1 G9	3817 G12	3825 C3	3833 F14	3839 G14	5804 A6	7809 E11	F805 A6	F811 E14	F817 F2	F823 G2	F830 G10	I813 F5	I819 G13	I838 E13	I848 E13
2806 A8	2812 B3	2818 A6	2824 A6	2830 B6	2837 F3	2843 G12	2849 G2	3802-2 B11	3803-4 C11	3805-2 C11	3806-4 D11	3813-2 F9	3819 G12	3826 E12	3834 F4	4836 F15	5805 A6	7810 F13	F806 H2	F812 F2	F818 F2	F824 G1	I802 D2	I814 F4	I822 D4	I840 F4	
2807 A5	2813 A6	2819 A6	2825 B6	2832 D2	2838 F3	2844 G12	3801-1 A11	3802-3 B11	3804-1 C11	3805-3 D11	3807 G9	3813-3 F9	3821 C4	3827 E12	3835 B5	4838 F15	7801 B1	F801 A6	F807 H2	F813 F2	F819 F2	F826 E11	I803 D2	I815 G11	I829 F14	I841 G11	



TV & Scaler Board: PCHD-MUX

A13 PCHD-MUX

DMR (RESERVE)

SYNC SELECTION

RGB/YPrPb SELECTION

FOR TOP CONTROL + IR

TO 1698 OF IO BOARD

TO SCALER

1601	B1	6640	G4
2601	A7	6646	F2
2602	D5	7601	A7
2603	D6	7604-1	E6
2604	D6	7604-2	E7
2605	E7	7604-3	E6
2606	E5	7604-4	F7
2607	D10	7604-5	F6
2608	D10	7604-6	F7
2609	D10	7605	E5
2610	D10	7606	A9
2611	D10	7607	D10
2612	E11	7640	G2
2613	E11	7601	F2
2614	E11	F602	B7
2615	F11	F603	E8
2616	F11	F604	F8
2617	F11	F605	E9
2618	F11	F606	B9
2619	F8	F607	D9
2620	G11	F608	G10
2621	E2	F609	C2
2622	E2	F610	C2
2623	E2	F612	E12
2624	D5	F613	E12
2625	D5	F615	E12
2626	D5	F617	F12
2627	A5	F618	C2
2628	B5	F619	C2
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2631	C8	F622	C2
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2633	B10	F625	D4
2634	B10	F626	D4
2635	B10	F627	C2
2636	A10	F628	C2
2637	F2	F629	D2
2638	D2	F630	D2
2639	D2	F631	D2
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3606	F7	F637	D2
3607	E5	F638	E2
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3609	F5	F640	E2
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3646	D5	I633	B10
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4609	G7	I642	F11
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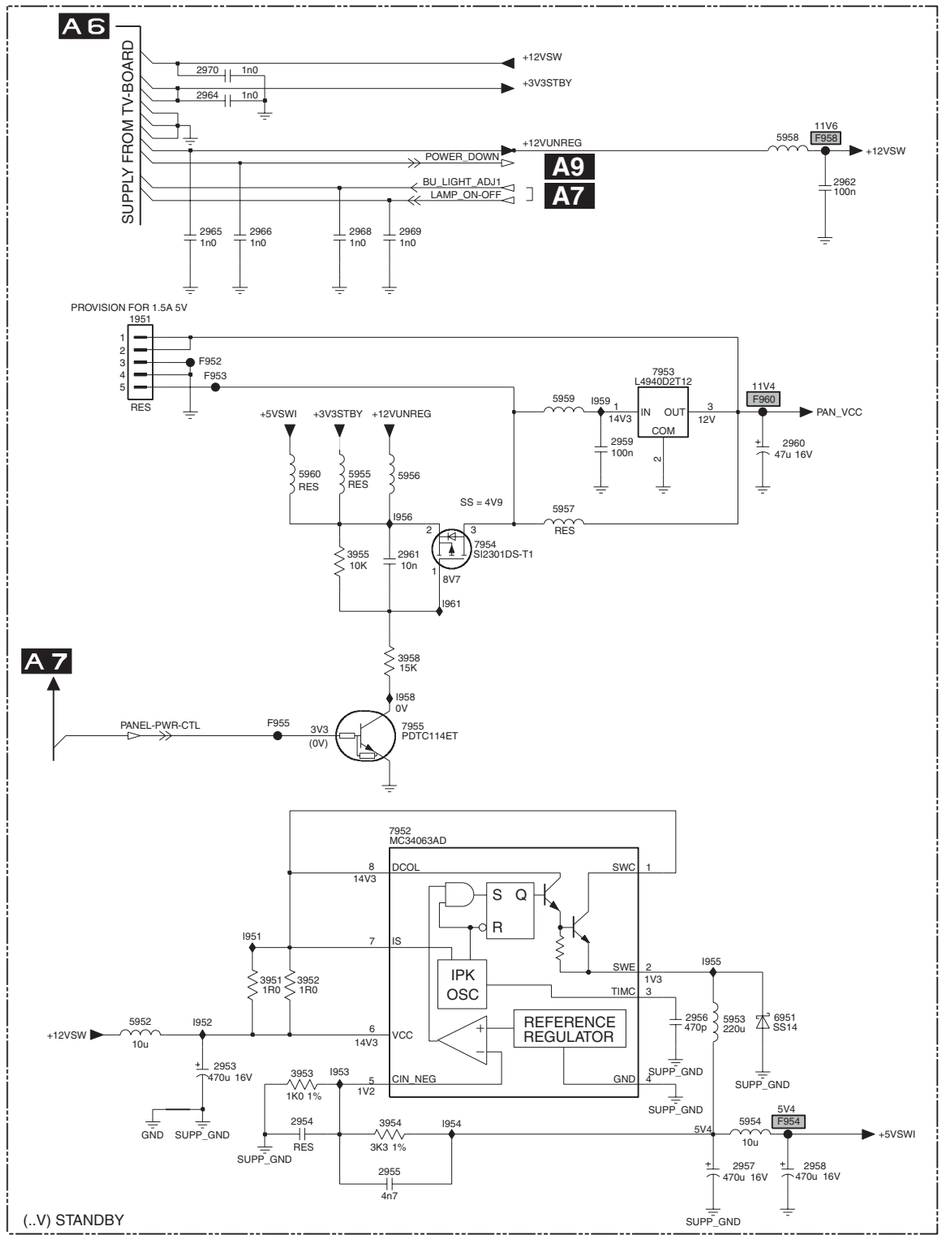
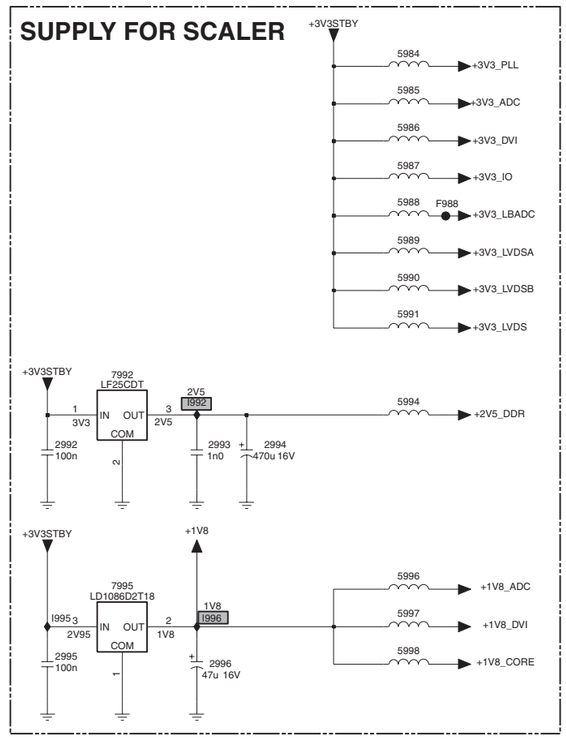
TV & Scaler Board: Supply

A 1 4 SUPPLY





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Layout TV & Scaler Board: (Overview Top Side)

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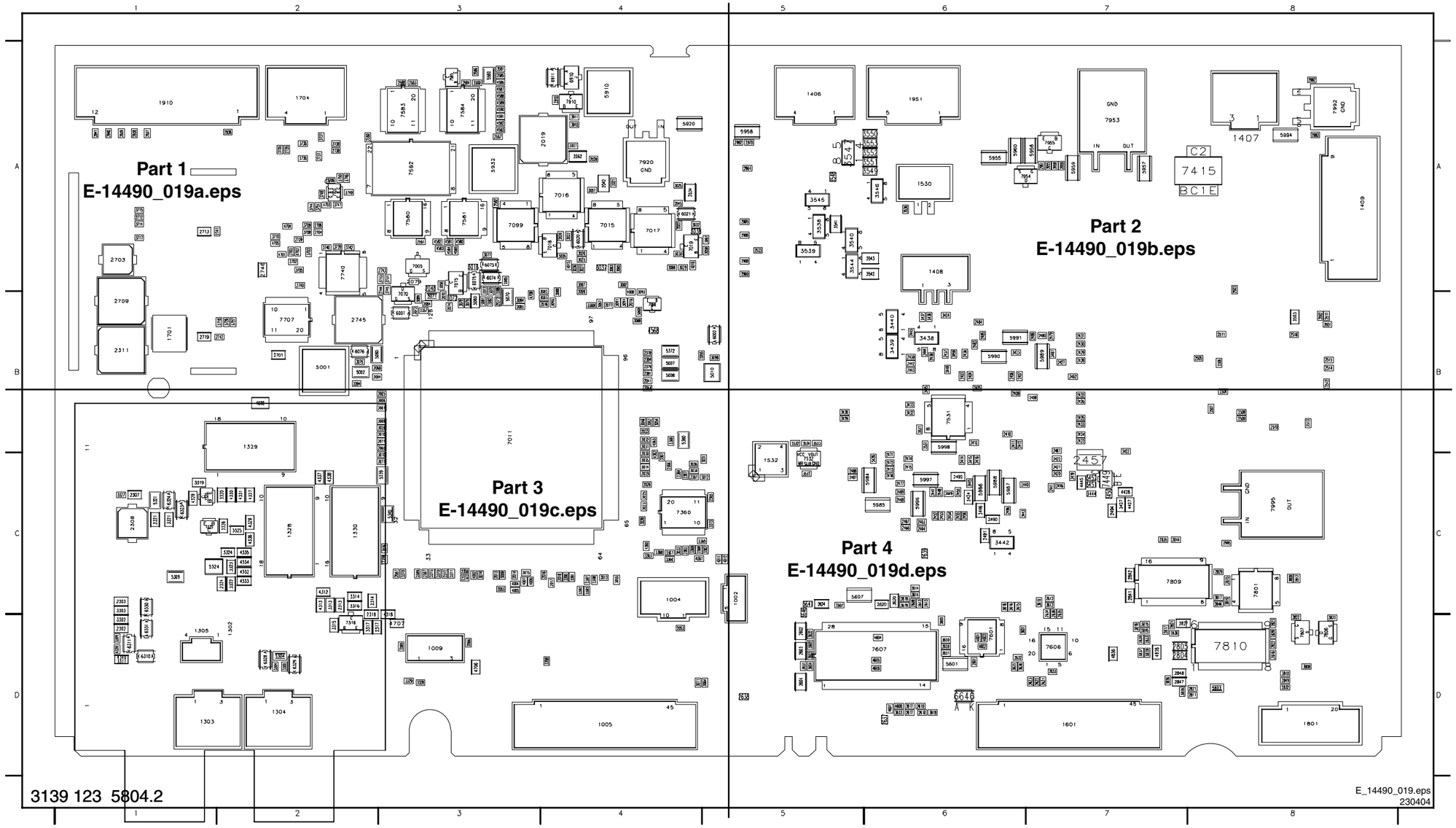
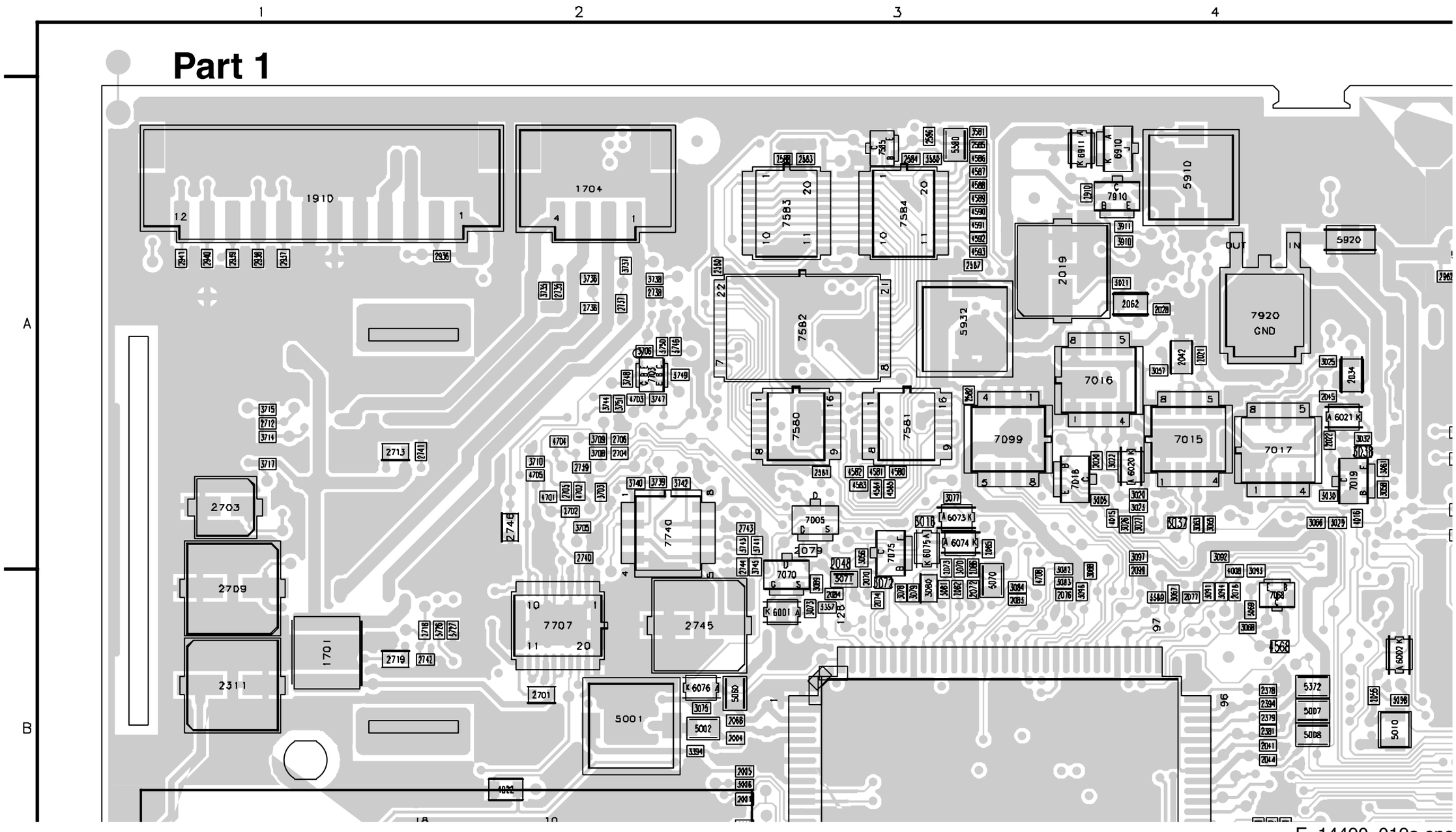


Layout TV & Scaler Board: (Part 1 Top Side)



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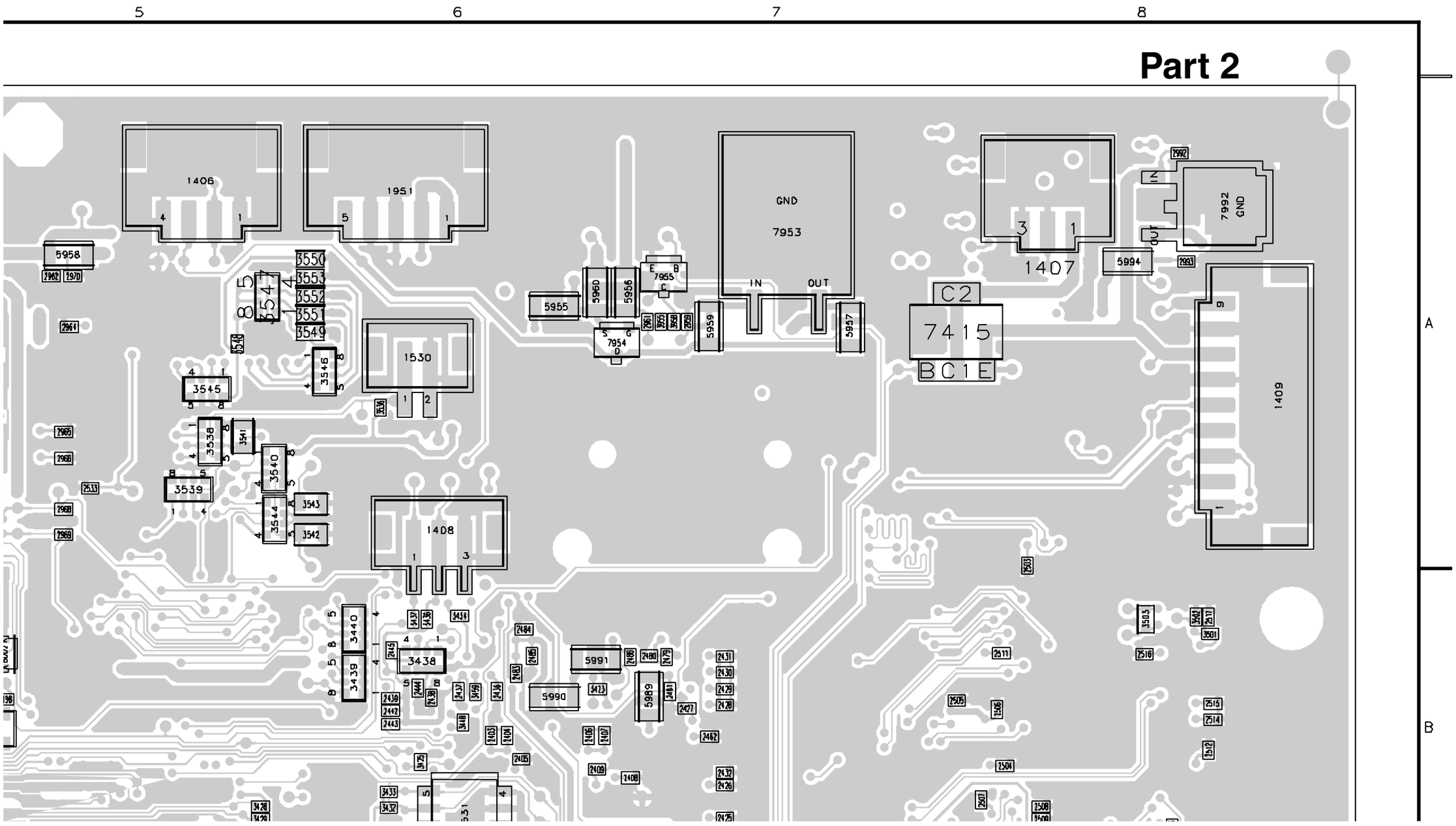

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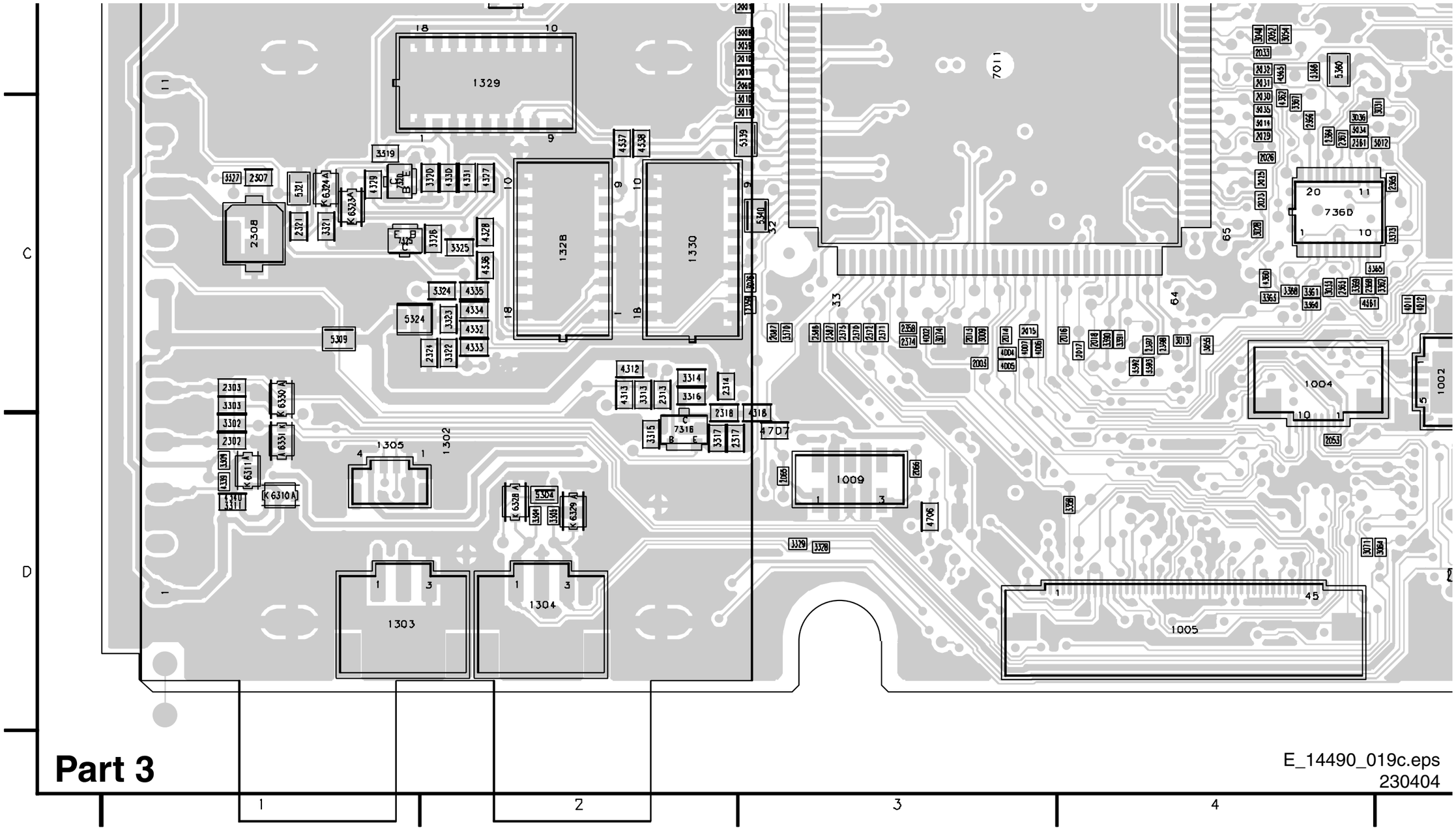

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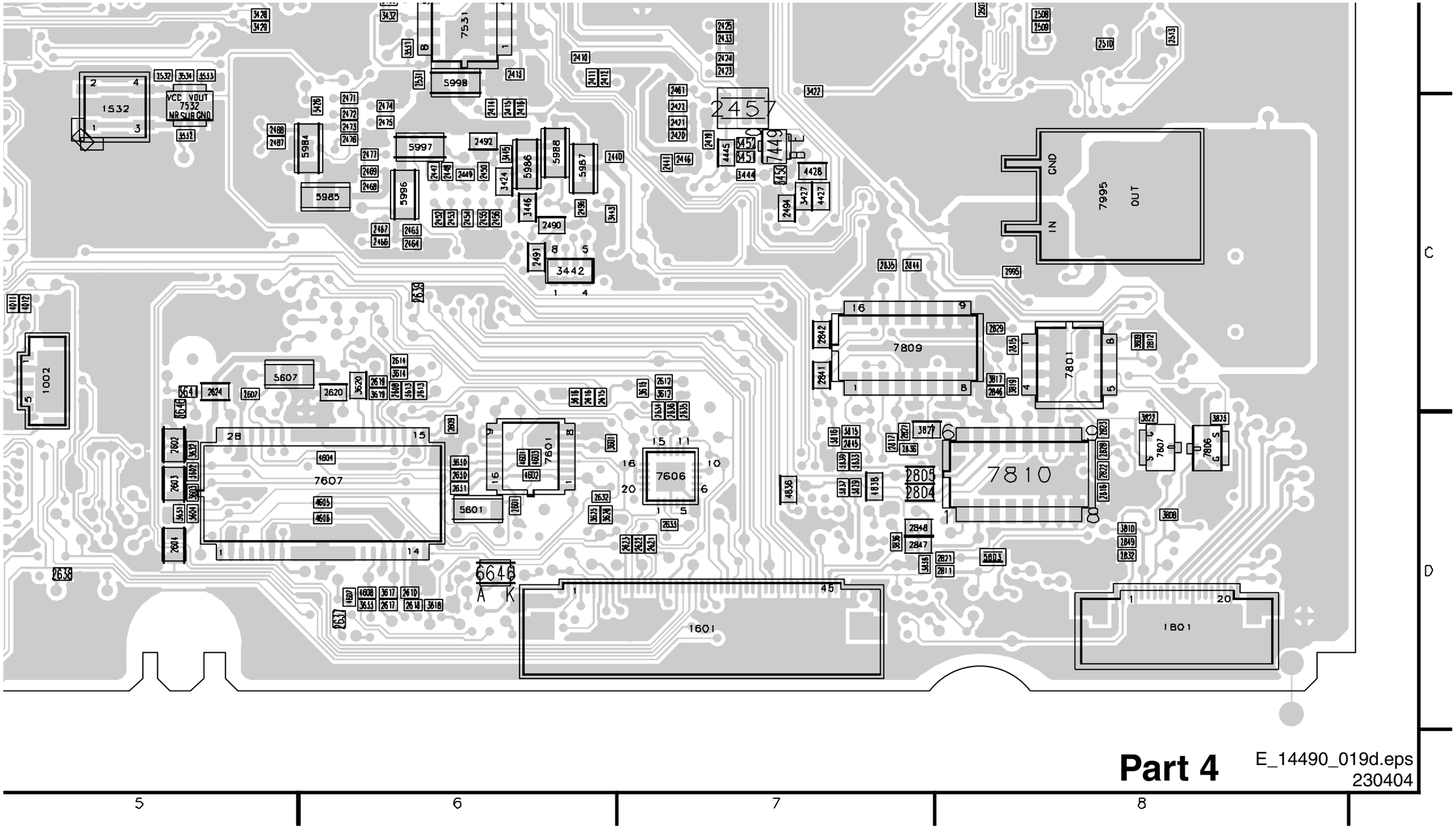

Part 4

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Layout TV & Scaler Board: (Overview Bottom Side)

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1008	C5	2035	B5	2355	C6	2395	C6	2470	C4	2564	C6	2710	D6	2813	D1	2837	D1	2866	B2	2933	A5	2994	A1	3024	A6	3359	C6	3401	C1	3412	B2	3564	B5	3623	D2	3644	D4	3731	A5	3821	D2	3933	A5	5004	C6	5802	D1	6564	B5	7012	B5	7560	C5	7808	D1
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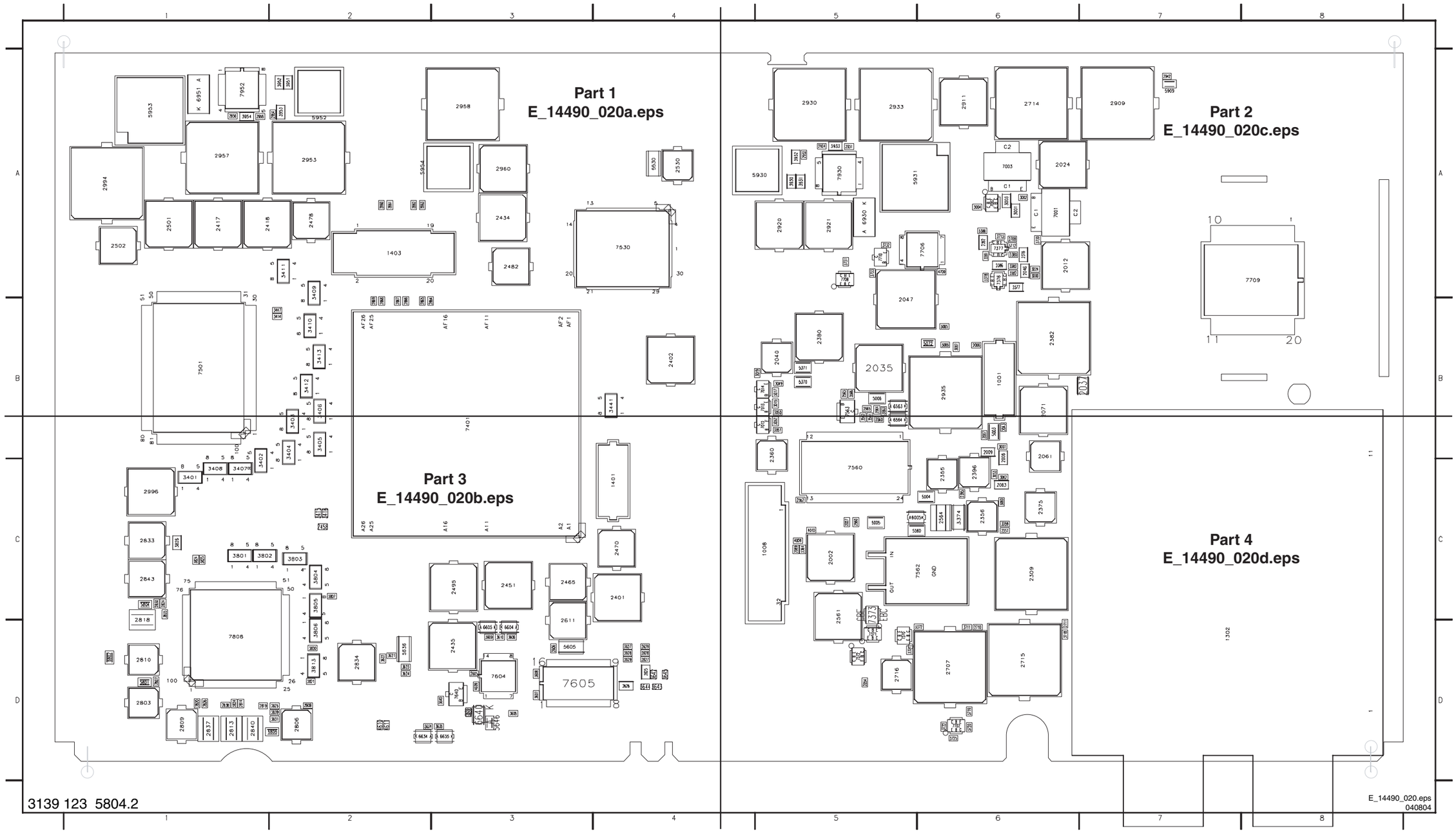
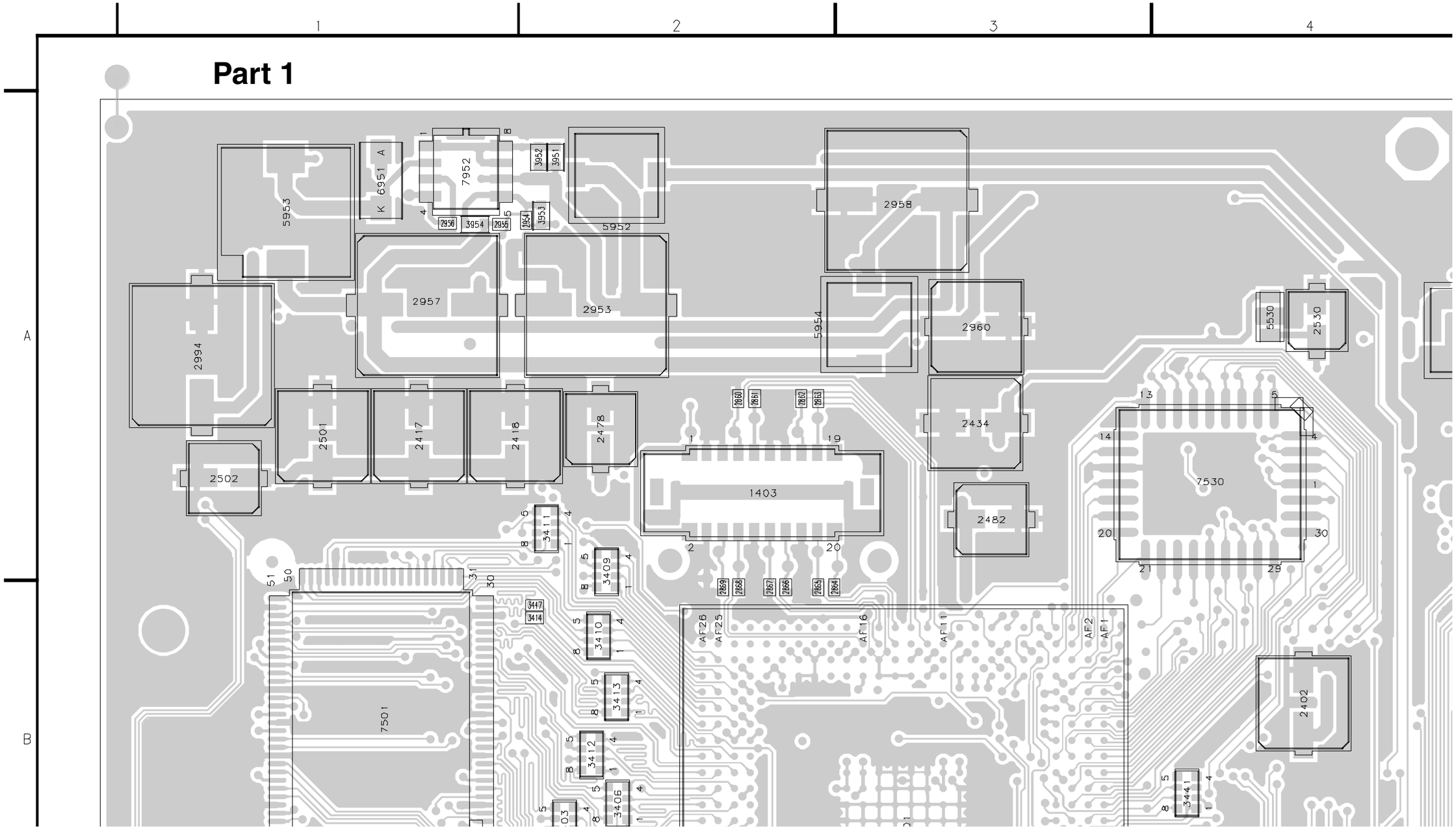


Layout TV & Scaler Board: (Part 1 Bottom Side)

Part 1



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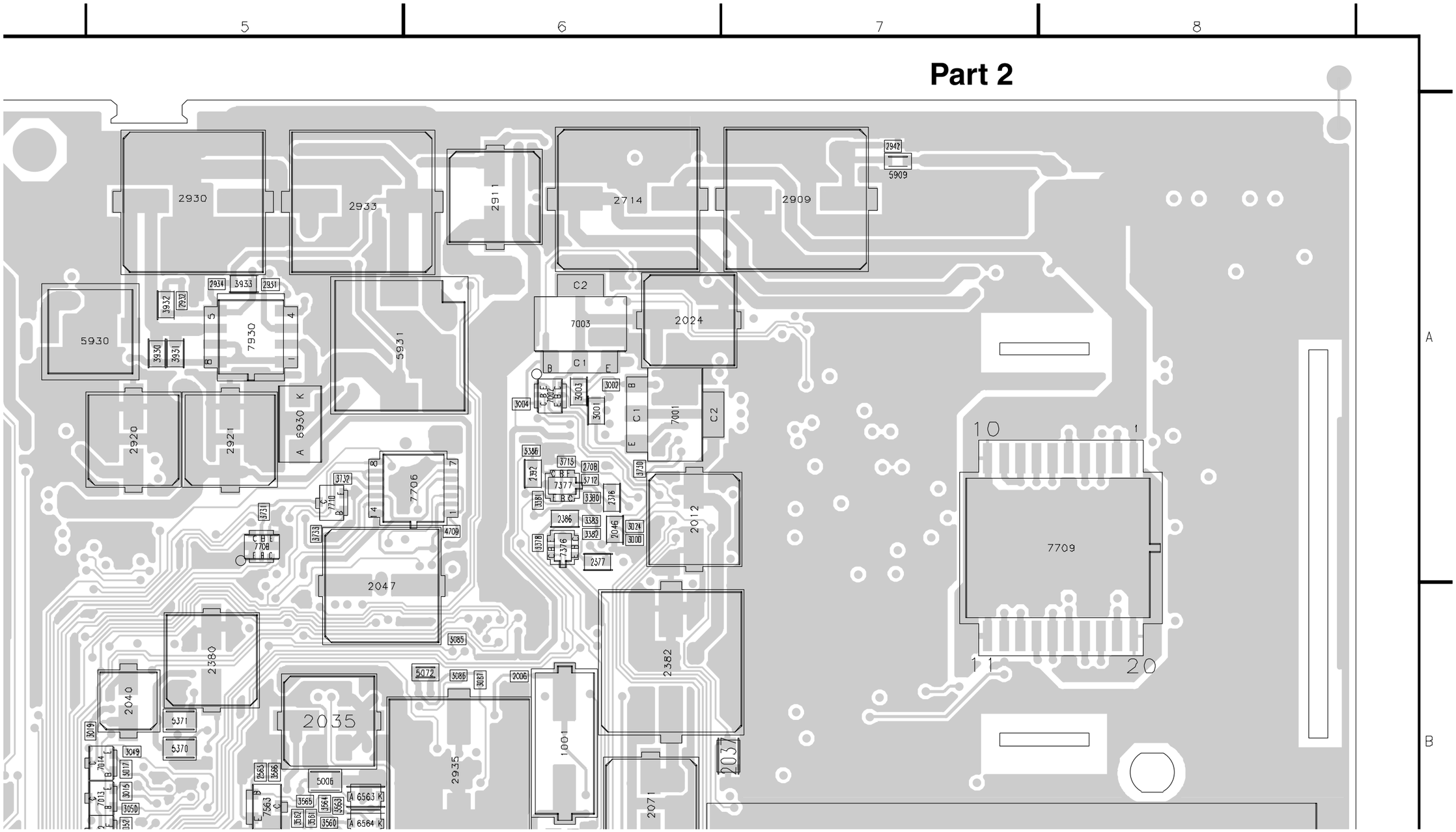
Layout TV & Scaler Board: (Part 2 Bottom Side)



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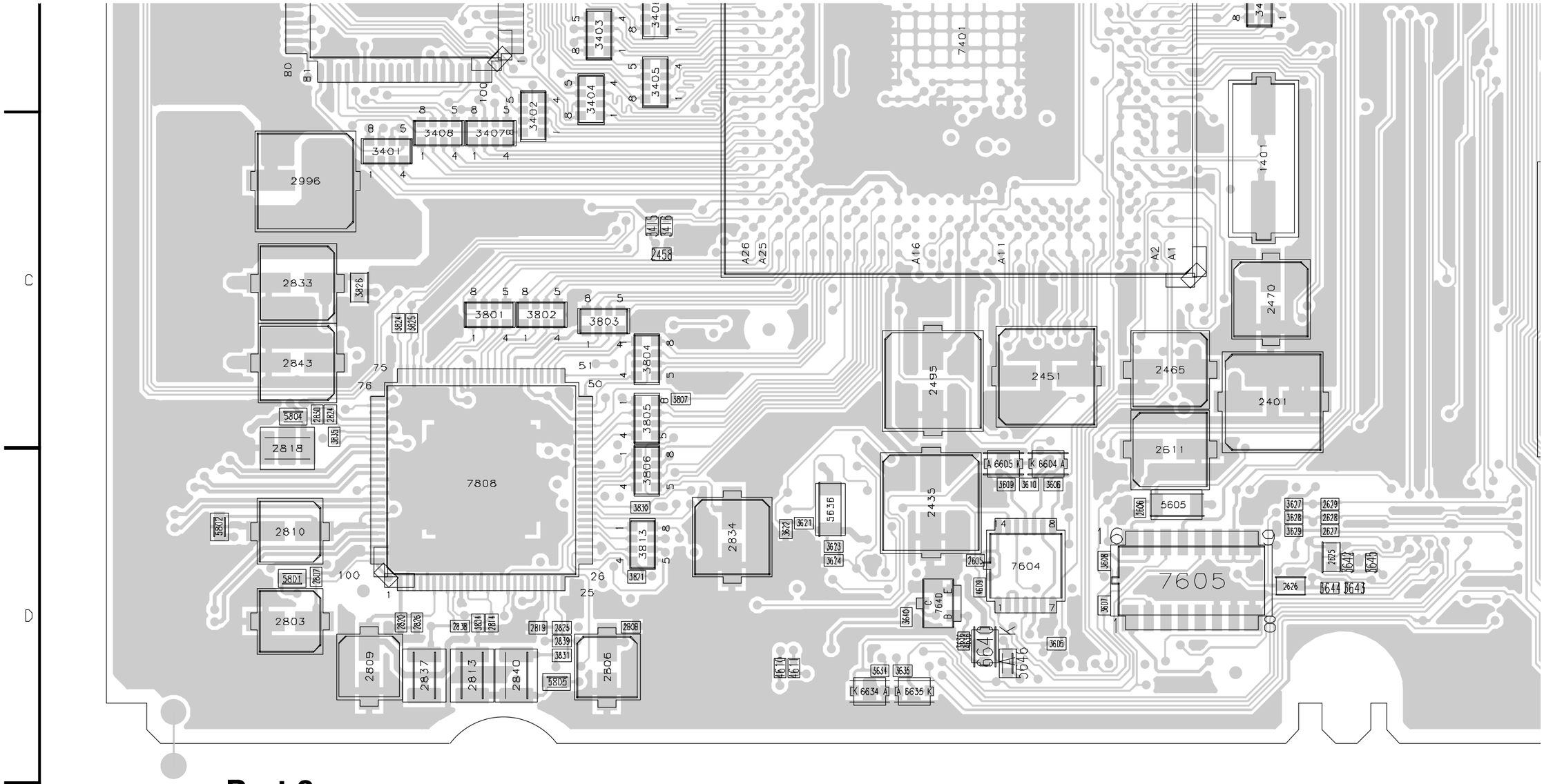
Layout TV & Scaler Board: (Part 3 Bottom Side)



Part 3

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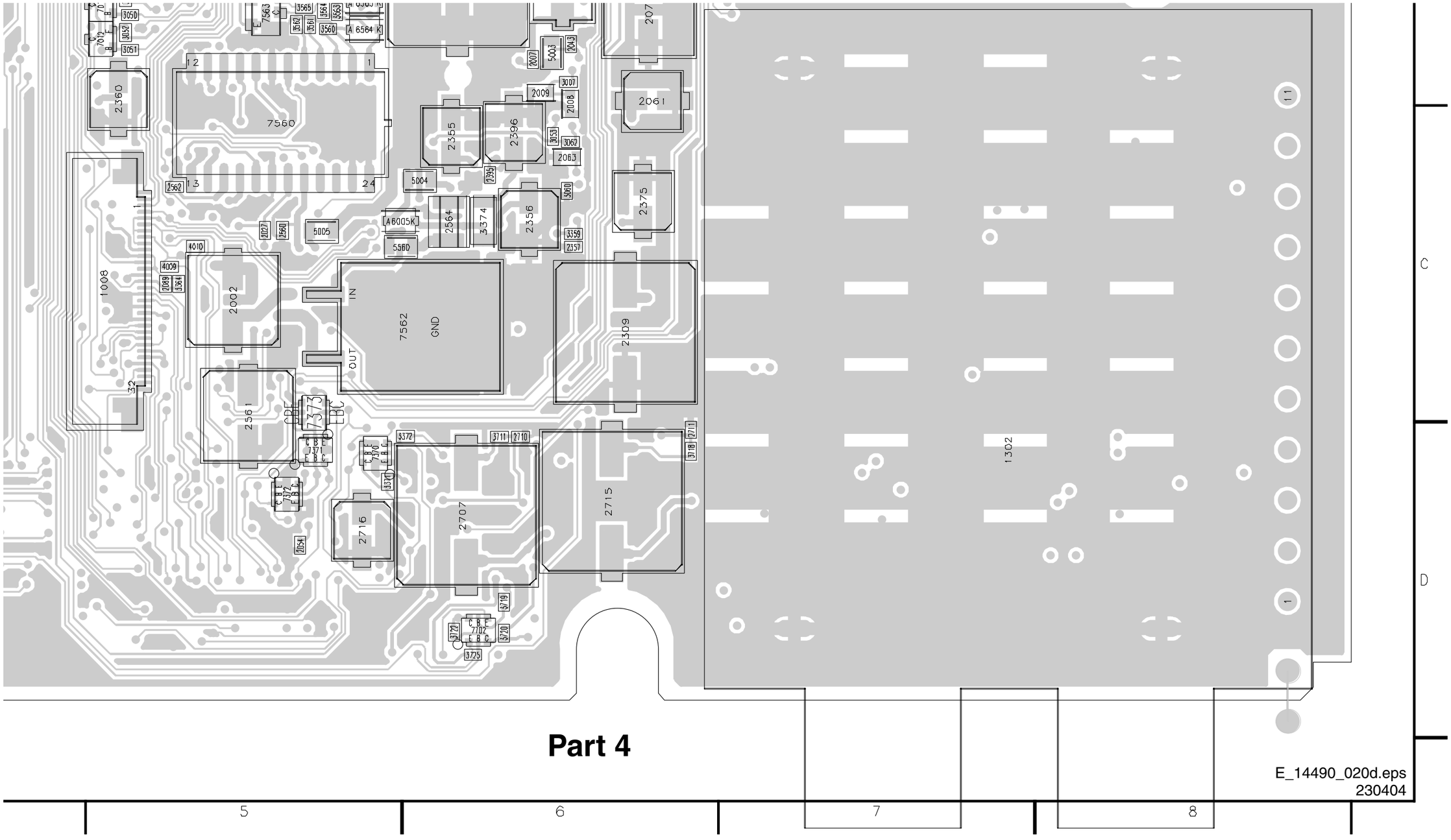
230404

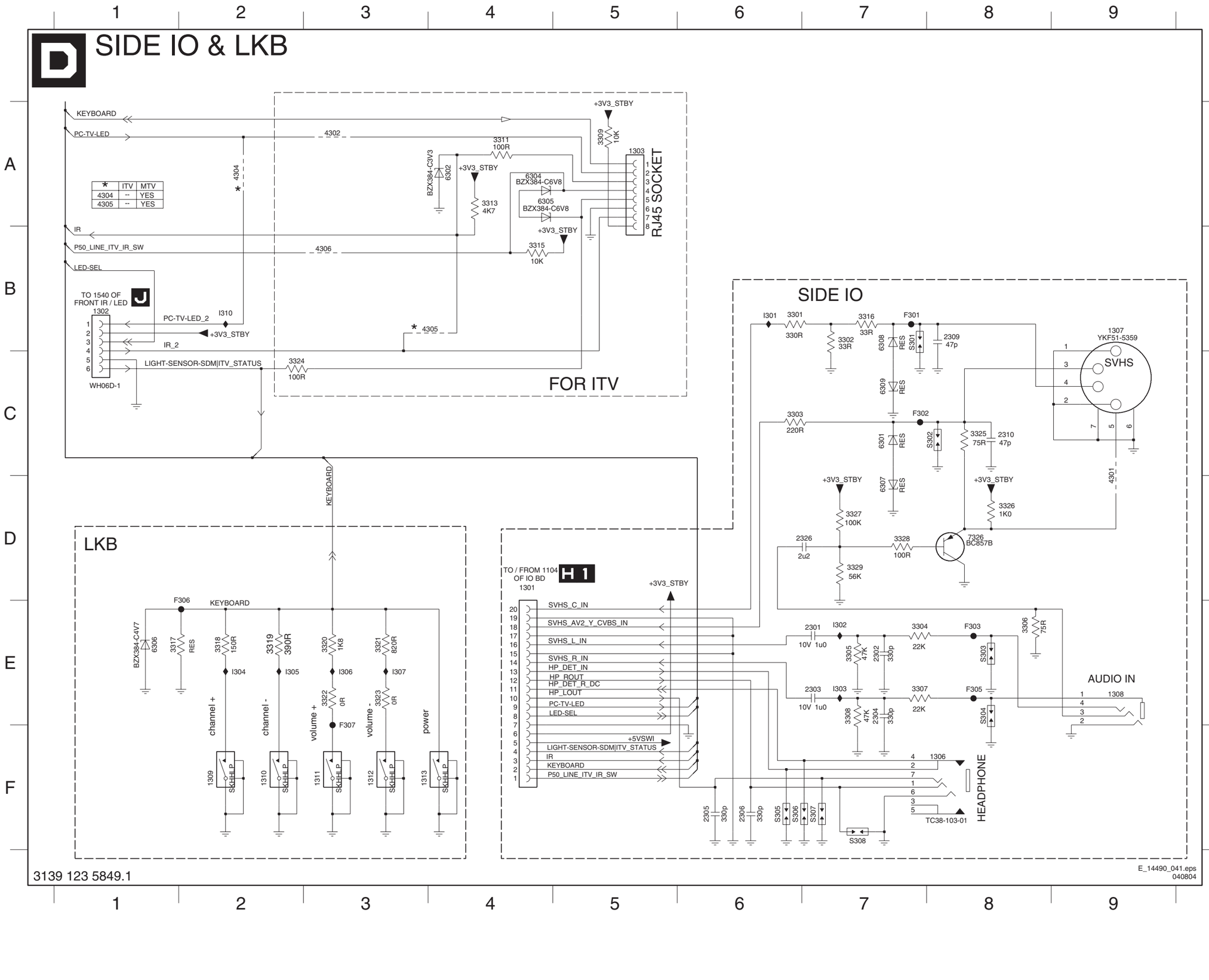
Layout TV & Scaler Board: (Part 4 Bottom Side)



Part 4

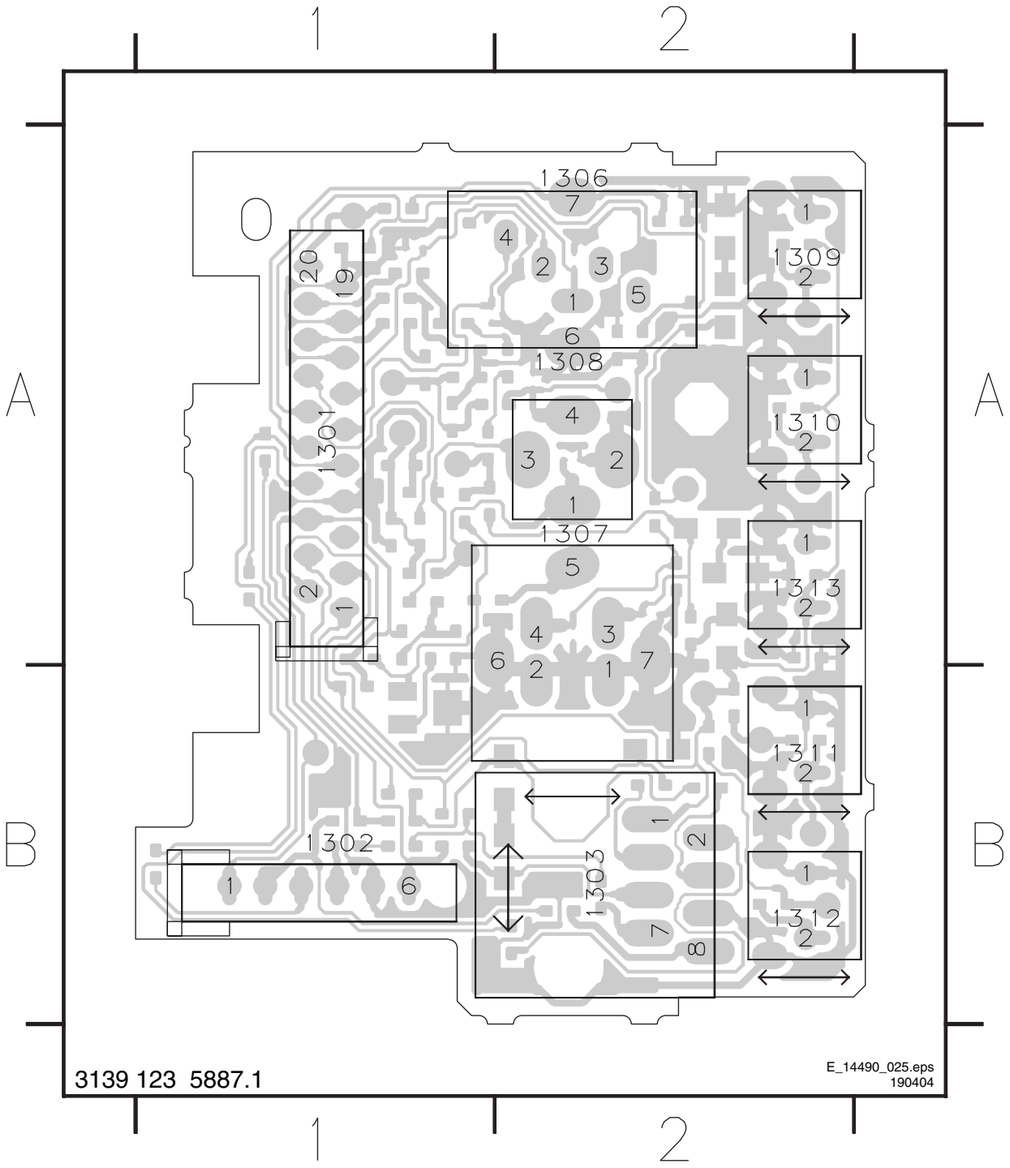
E_14490_020d.eps
230404

Side IO and LKB Panel



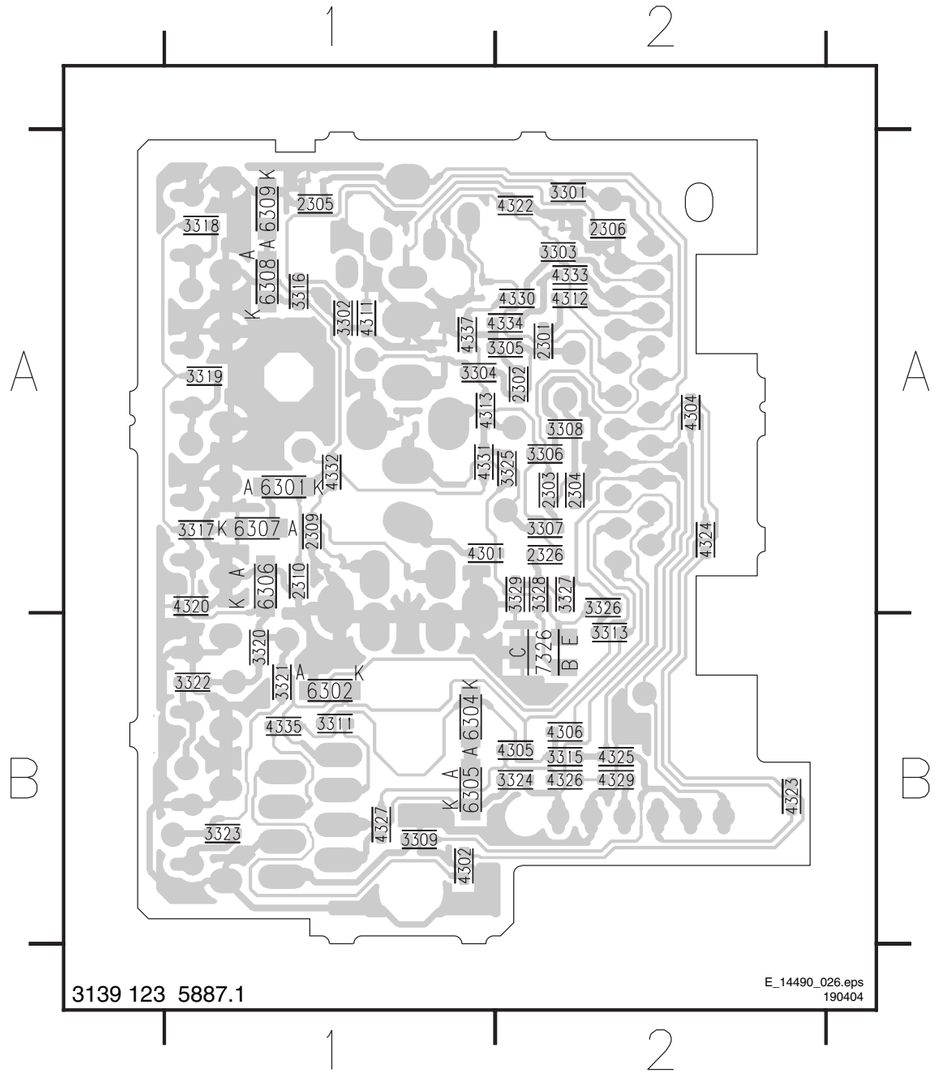
1301 D4 S303 E8
1302 B1 S304 E8
1303 A5 S305 F6
1306 F8 S306 F6
1307 B9 S307 F7
1308 E9 S308 F7
1309 F2
1310 F2
1311 F3
1312 F3
1313 F3
2301 E7
2302 E7
2303 E7
2304 E7
2305 F6
2306 F6
2309 B8
2310 C8
2326 D7
3301 B6
3302 B7
3303 C6
3304 E7
3305 E7
3306 E8
3307 E7
3308 E7
3309 A5
3311 A4
3313 A4
3315 B4
3316 B7
3317 E1
3318 E2
3319 E2
3320 E3
3321 E3
3322 E3
3323 E3
3324 C2
3325 C8
3326 D8
3327 D7
3328 D7
3329 D7
4301 C9
4302 A3
4304 A2
4305 B4
4306 B3
6301 C7
6302 A4
6304 A4
6305 A4
6306 E1
6307 D7
6308 B7
6309 C7
7326 D8
F301 B7
F302 C7
F303 E8
F305 E8
F306 E2
F307 F3
I301 B6
I302 E7
I303 E7
I304 E2
I305 E2
I306 E3
I307 E3
I310 B2
S301 B7
S302 C8

Layout Side IO and LKB Panel (Top Side)



1301 A1
1302 B1
1303 B2
1306 A2
1307 A2
1308 A2
1309 A2
1310 A2
1311 B2
1312 B2
1313 A2

Layout Side IO and LKB Panel (Bottom Side)



2301 A2
2302 A2
2303 A2
2304 A2
2305 A1
2306 A2
2309 A1
2310 A1
2326 A2
3301 A2
3302 A1
3303 A2
3304 A1
3305 A2
3306 A2
3307 A2
3308 A2
3309 B1
3311 B1
3313 B2
3315 B2
3316 A1
3317 A1
3318 A1
3319 A1
3320 B1
3321 B1
3322 B1
3323 B1
3324 B2
3325 A2
3326 A2
3327 A2
3328 A2
3329 A2
4301 A1
4302 B1
4304 A2
4305 B2
4306 B2
4311 A1
4312 A2
4313 A1
4320 A1
4322 A2
4323 B2
4324 A2
4325 B2
4326 B2
4327 B1
4329 B2
4330 A2
4331 A1
4332 A1
4333 A2
4334 A2
4335 B1
4337 A1
6301 A1
6302 B1
6304 B1
6305 B1
6306 A1
6307 A1
6308 A2
6309 A1
7326 B2

Rear IO Panel: Scart (17”)

H 1 REAR IO SCART

SCART 1

Audio-R_out
Audio-R_in
Audio-L_out
Audio-L_in
RGB-B_in
Function_Sw
RGB-G_in
RGB-R_in
RGB-BL_in
Terr_CVBS_out
Video_in

SC1_R_RF_OUT
SC1_COMP_AV1_R_IN
SC1_L_RF_OUT
SC1_COMP_AV1_L_IN
SC1_COMP_B_U_IN
STATUS_1
SC1_COMP_AV1_G_Y_CVBS_IN
SC1_COMP_R_V_IN
SC1_FBL_IN
SCV1_CVBS_RF_OUT
SC1_CVBS_IN

CONSTANT AUDIO OUTPUT

Const_R_OUT
Audio-RIGHT
Const_L_OUT
Audio-LEFT

TO 1005 OF A3

SCART 2

Audio-R_out
Audio-R_in
Audio-L_out
Audio-L_in
Function_Sw
YC-C_in
CVBS_out
Video/YC-Y_in

SC2_R_MON_OUT
SC2_R_IN
SC2_L_MON_OUT
P50_LINE_ITV_IR_SW
SC2_L_IN
STATUS_2
SC2_C_IN
SC2_CVBS_MON_OUT
SC2_Y_IN

SVHS_C_IN
SVHS_AV2_Y_CVBS_IN
SVHS_L_IN
SVHS_R_IN
HP_DET_IN
HP_ROUT
HP_DET_R_DC
HP_LOUT
PC-TV-LED
LED-SEL
+3V3STBY
+5VSWI
LIGHT-SENSOR-SDM
IR
KEYBOARD
P50_LINE_ITV_IR_SW

H2

TO 1301 OF SIDE-IO D

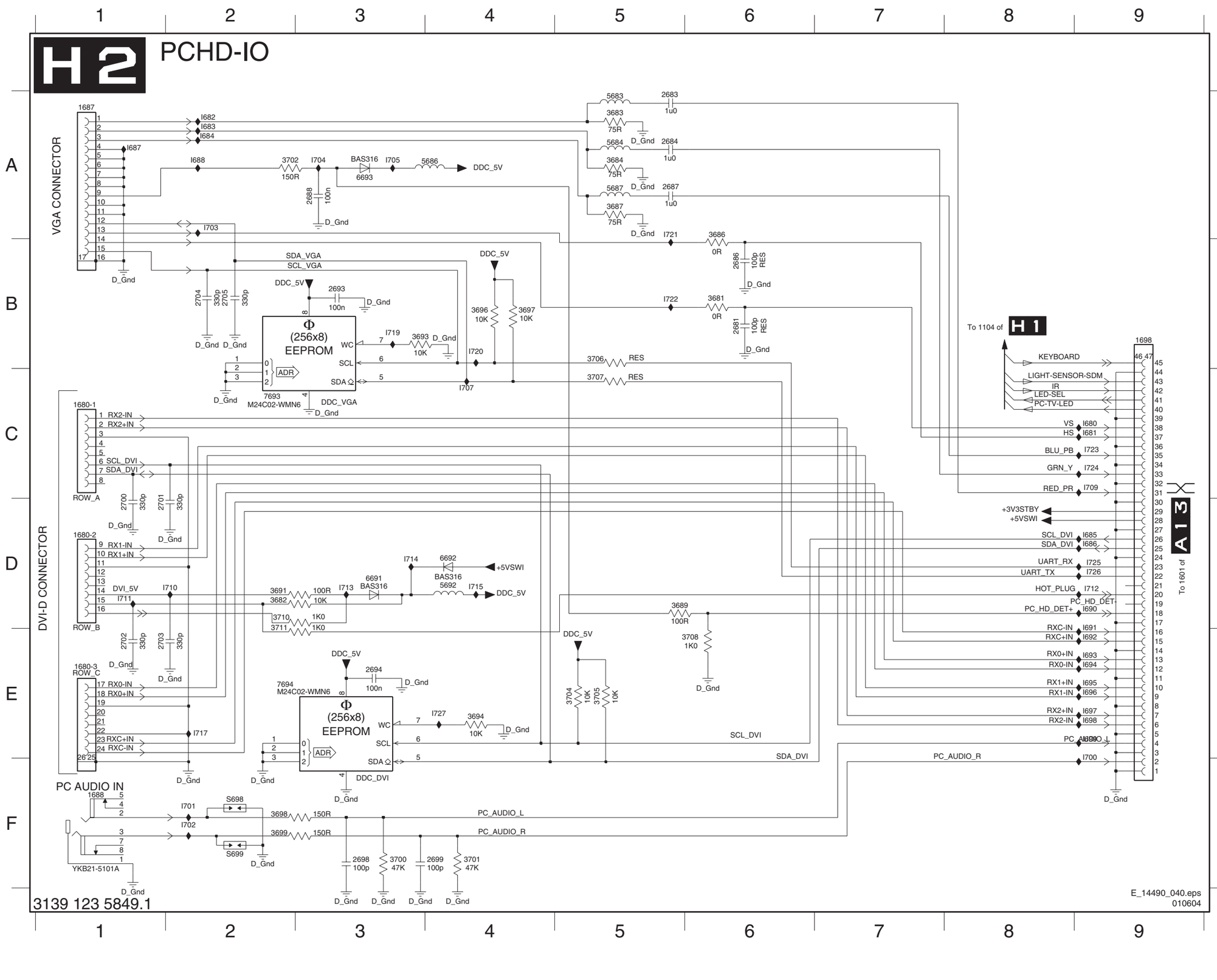
FOR ITV ONLY

3139 123 5849.1

E_14490_039.eps
010604

1101 A2 7138 C9 S130 C11
1102 A11 F101 A3 S131 C11
1103 C7 F103 B3 S132 C11
1104 E12 F105 B3 S133 C10
1105 G2 F106 A2 S135 C10
1106 B2 F107 C3 S137 C10
1107 G12 F108 C2 S141 D10
2101 A4 F109 C3 S143 D10
2102 A5 F111 D3 S153 G3
2103 B4 F113 D3 S156 G3
2104 B5 F115 E3
2105 B4 F117 E3
2106 B5 F119 F3
2107 C4 F120 F4
2108 C5 F121 F3
2109 A2 F127 A11
2110 B2 F128 A11
2111 B3 F129 B11
2112 B2 F133 B11
2126 A9 F134 C9
2127 A10 F135 C11
2128 A9 F137 C11
2129 B10 F141 D11
2130 B9 F143 D11
2131 B10 F147 G4
2132 B9 F148 G4
2133 C10 F153 G3
2134 A11 F154 G2
2135 A11 F156 G3
2136 A11 F191 D8
2137 A11 F193 B8
2138 D9 F205 G6
2140 F4 F206 B11
2141 F4 F207 B11
2147 G4 F208 B11
2148 G4 F209 C11
2152 G3 F211 A11
2153 G3 F212 E7
2155 G3 I102 A4
2157 G3 I104 B4
2169 F7 I105 C4
3101 A4 I106 B4
3102 A4 I110 C4
3103 B4 I112 D4
3104 B4 I114 D4
3105 B4 I116 E4
3106 B4 I118 E4
3107 C4 I119 F3
3108 C4 I120 F4
3109 C4 I126 A9
3110 C4 I128 A9
3111 D4 I130 B9
3112 D4 I132 B9
3113 D4 I136 C9
3114 D4 I139 D9
3115 E4 I140 D10
3116 E4 I142 D9
3117 E4 I147 G4
3118 E4 I155 G4
3119 F3 I156 E9
3121 F3 I157 E9
3122 F3 I158 E9
3123 F3 I159 E9
3124 F5 I160 E9
3125 F5 I161 F9
3126 A9 I162 F9
3127 A10 I163 F9
3128 B9 I164 F11
3129 A10 I165 F11
3130 B9 I166 F11
3131 B10 I167 F11
3132 C9 I168 F11
3133 B10 I169 F11
3134 C9 I171 F7
3135 C10 I173 F6
3136 C9 I174 F6
3137 C10 I175 F7
3138 C9 I176 F6
3139 D9 I177 E7
3140 D10 I178 E7
3141 D10 I179 D11
3142 D9 I180 F11
3143 D10 I181 F11
3152 G4 I182 F11
3153 G3 I185 A8
3155 G4 S101 A3
3156 G3 S103 B3
3157 C10 S104 C2
3158 F4 S105 B3
3169 F7 S107 C3
4103 B3 S109 C3
4104 A3 S111 D3
4105 B9 S113 D3
4106 F4 S115 E3
4126 F5 S117 E3
4127 A10 S119 F2
4128 B10 S121 F2
5101 F4 S126 B11
6121 F3 S127 A10
6143 D10 S128 B10
7119 F4 S129 B10

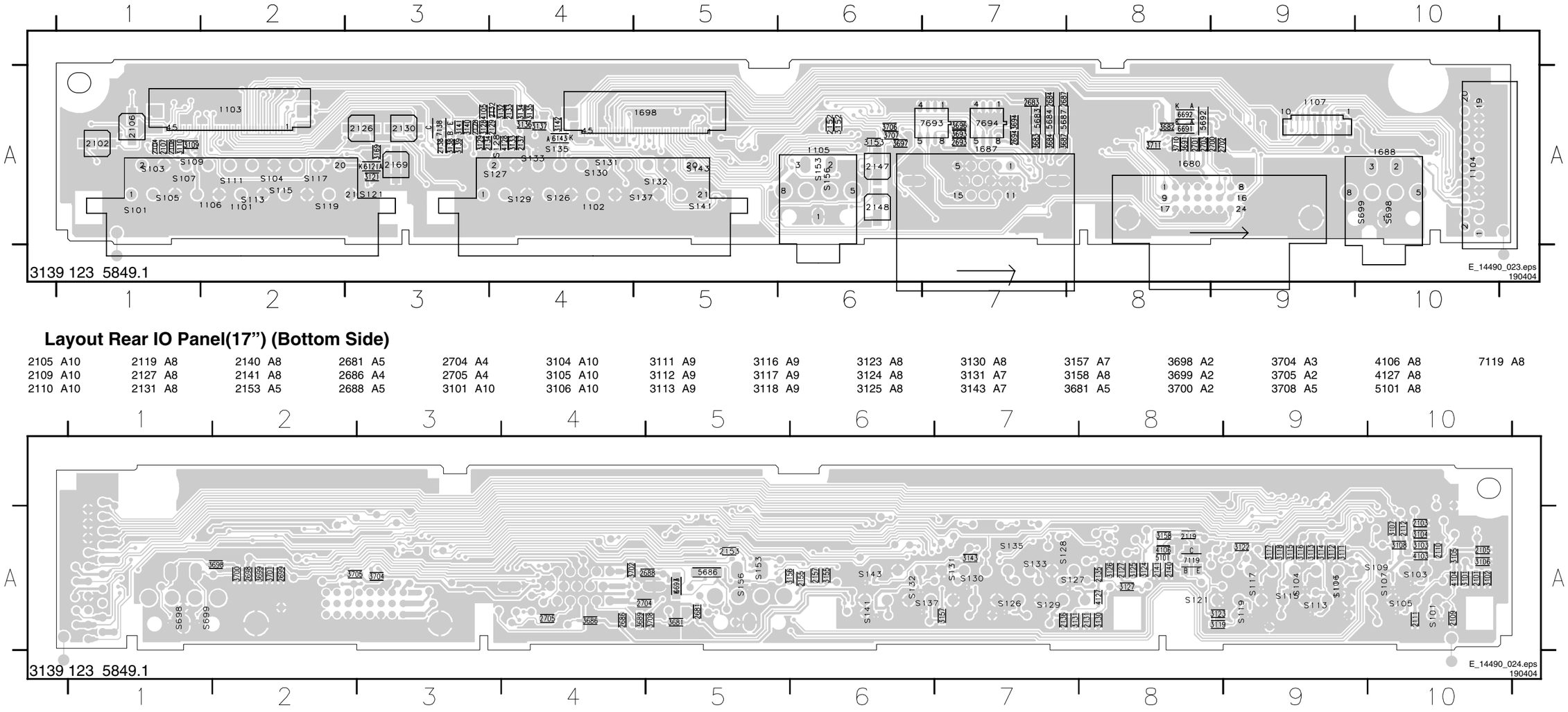
Rear IO Panel: PCHD-IO (17")



1680-1 C1	I701 F2
1680-2 D1	I702 F2
1680-3 E1	I703 A2
1687 A1	I704 A3
1688 F1	I705 A3
1698 B9	I707 C4
2681 B6	I709 C9
2683 A5	I710 D2
2684 A5	I711 D1
2686 B6	I712 D9
2687 A5	I713 D3
2688 A3	I714 D3
2693 B3	I715 D4
2694 E3	I717 E2
2698 F3	I719 B3
2699 F4	I720 B4
2700 D1	I721 A5
2701 D1	I722 B5
2702 E1	I723 C9
2703 E1	I724 C9
2704 B2	I725 D9
2705 B2	I726 D9
3681 B6	I727 E4
3682 D2	S698 F2
3683 A5	S699 F2
3684 A5	
3686 A6	
3687 A5	
3689 D5	
3691 D2	
3693 B3	
3694 E4	
3696 B4	
3697 B4	
3698 F2	
3699 F2	
3700 F3	
3701 F4	
3702 A2	
3704 E5	
3705 E5	
3706 B5	
3707 C5	
3708 E6	
3710 D2	
3711 E2	
5683 A5	
5684 A5	
5686 A4	
5687 A5	
5692 D4	
6691 D3	
6692 D4	
6693 A3	
7693 C2	
7694 E2	
I680 C9	
I681 C9	
I682 A2	
I683 A2	
I684 A2	
I685 D9	
I686 D9	
I687 A1	
I688 A2	
I690 D9	
I691 D9	
I692 E9	
I693 E9	
I694 E9	
I695 E9	
I696 E9	
I697 E9	
I698 E9	
I699 E9	
I700 E9	

Layout Rear IO Panel (17") (Top Side)

1101 A2 1102 A4 1103 A2 1104 A10 1105 A6 1107 A9 1680 A8 1687 A7 1688 A10 1698 A5 2102 A1 2104 A1 2106 A1 2107 A1 2108 A1 2126 A3 2128 A3 2129 A4 2130 A3 2132 A4 2133 A4 2134 A3 2137 A4 2138 A3 2147 A6 2148 A6 2152 A6 2169 A3 2683 A7 2684 A7 2687 A7 2693 A7 2694 A7 2700 A9 2701 A8 2702 A9 2703 A8 3109 A1 3110 A1 3121 A3 3128 A3 3129 A3 3132 A4 3133 A4 3134 A4 3135 A4 3136 A4 3137 A4 3138 A3 3139 A3 3140 A3 3141 A3 3142 A4 3152 A6 3153 A6 3169 A3 3682 A8 3683 A7 3684 A7 3687 A7 3691 A8 3693 A7 3694 A7 3696 A7 3697 A6 3706 A6 3707 A6 3710 A8 3711 A8 4105 A3 4128 A4 5683 A7 5684 A7 5687 A7 5692 A8 6121 A3 6143 A4 6691 A8 6692 A8 7138 A3 7693 A7 7694 A7



Layout Rear IO Panel(17") (Bottom Side)

2105 A10 2109 A10 2110 A10 2119 A8 2127 A8 2131 A8 2140 A8 2141 A8 2153 A5 2681 A5 2686 A4 2688 A5 2704 A4 2705 A4 3101 A10 3104 A10 3105 A10 3106 A10 3111 A9 3112 A9 3113 A9 3116 A9 3117 A9 3118 A9 3123 A8 3124 A8 3125 A8 3130 A8 3131 A7 3143 A7 3157 A7 3158 A8 3681 A5 3698 A2 3699 A2 3700 A2 3704 A3 3705 A2 3708 A5 4106 A8 4127 A8 5101 A8 7119 A8

Rear IO Panel: Scart (23”/26”)

H 1 REAR IO SCART

SCART 1

SCART 2

CONSTANT AUDIO OUTPUT

To 1005 of A 3

FROM 1698 OF PCHD-IO H2

TO 1301 OF SIDE I/O D

FOR ITV ONLY

45FLZ-SM1-R-TB

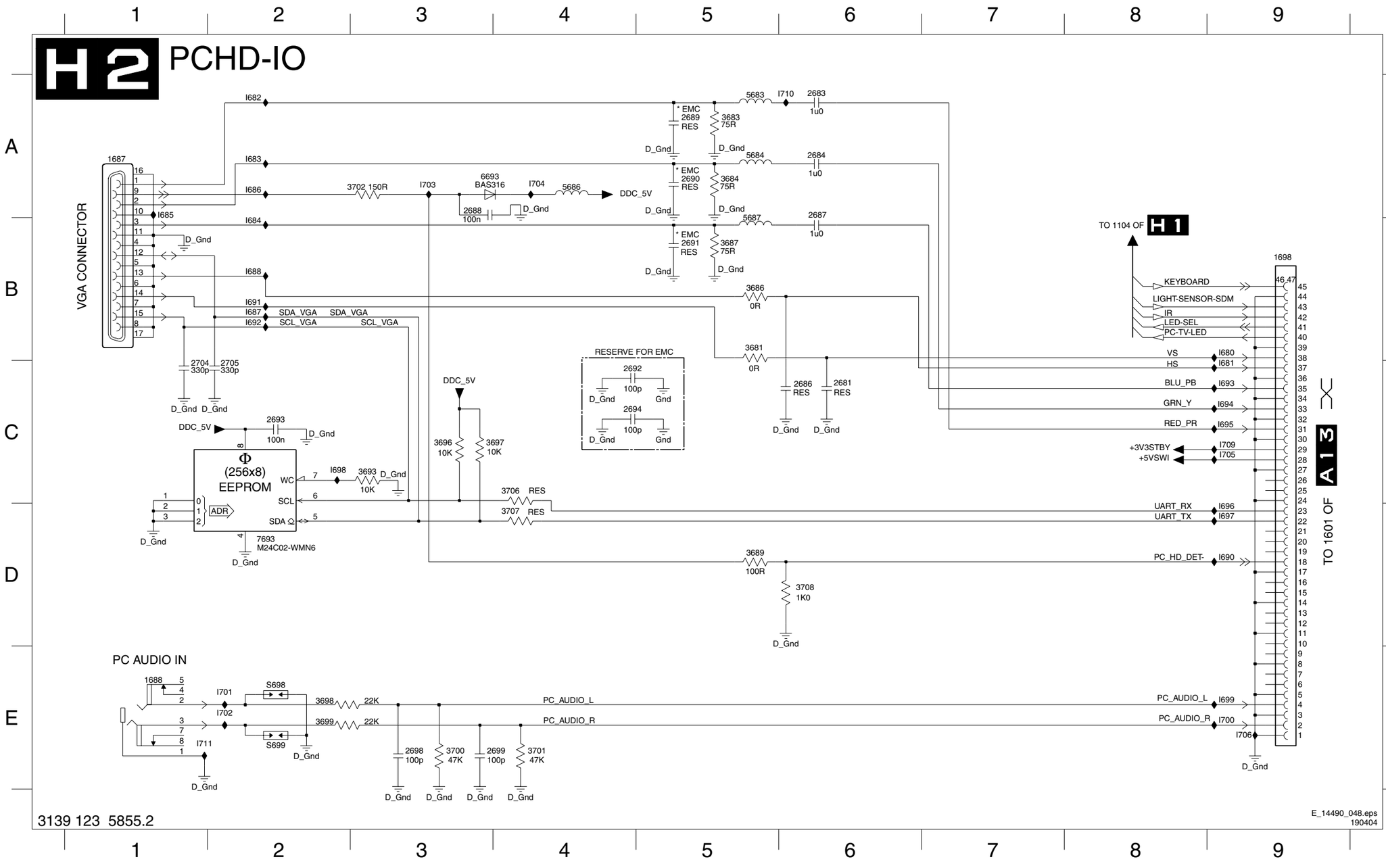
PPTV/21

3139 123 5855.2

E_14490_047.eps 190404

1101 A1	F101 A2	S127 A11	
1102 A12	F103 A2	S128 A11	
1103 C7	F105 A2	S129 B11	
1104 E12	F106 A2	S130 B11	
1105 G2	F107 B3	S131 B11	
1107 G12	F108 C2	S132 C11	
2101 A4	F109 C3	S133 B11	
2102 A5	F111 C3	S135 C11	
2103 B4	F113 D3	S137 C11	
2104 A5	F115 D3	S141 D11	
2105 B4	F117 E3	S143 D11	
2106 B5	F119 F2	S153 G3	
2107 C4	F120 F5	S156 G3	
2108 B5	F121 F3		
2109 A3	F127 A10		
2110 B3	F128 A10		
2111 B3	F129 B10		
2112 A2	F133 B10		
2119 F5	F134 C9		
2126 A9	F135 C10		
2127 A10	F137 C11		
2128 A9	F141 D11		
2129 B10	F143 D11		
2130 B9	F147 G5		
2131 B10	F148 G5		
2132 B9	F153 G3		
2133 C10	F154 G2		
2134 B11	F156 G3		
2135 A11	F191 E7		
2136 B11	F193 E7		
2137 A11	F205 G7		
2138 D9	F206 B12		
2140 F4	F207 B12		
2141 F4	F208 B12		
2147 G4	F209 C12		
2148 G4	F211 A12		
2152 G3	F212 E7		
2153 G3	I101 B12		
2155 G3	I102 A4		
2157 G3	I103 D12		
2169 F7	I104 A4		
3101 A4	I105 B4		
3102 A4	I106 B4		
3103 A4	I109 F11		
3104 B4	I110 C5		
3105 B4	I111 D7		
3106 B4	I112 C5		
3107 C4	I113 E7		
3108 B4	I114 D5		
3109 C4	I115 E7		
3110 C5	I116 D5		
3111 C4	I117 F8		
3112 D4	I118 E5		
3113 D4	I119 F3		
3114 D5	I120 F3		
3115 E4	I121 F6		
3116 D5	I122 F6		
3117 E5	I123 F6		
3118 E4	I124 F6		
3119 F3	I125 F6		
3121 F4	I126 A9		
3122 F4	I128 A9		
3123 F3	I130 B9		
3124 E5	I132 B9		
3125 F5	I133 F4		
3126 A9	I134 F4		
3127 A10	I135 C10		
3128 B9	I136 C9		
3129 A10	I139 D9		
3130 B9	I140 D10		
3131 B10	I142 D9		
3132 C9	I147 G4		
3133 B10	I155 G4		
3134 C9	I156 E11		
3135 C10	I157 E11		
3136 C9	I158 E11		
3137 C10	I159 E11		
3138 C9	I160 E11		
3139 D9	I161 F11		
3140 D10	I162 F11		
3141 D10	I163 F11		
3142 D10	I164 F11		
3143 E10	I165 F11		
3152 G4	I166 F11		
3153 G3	I167 F11		
3155 G4	I168 F11		
3156 G3	I169 F11		
3157 C10	S101 A3		
3158 F4	S103 A3		
3169 F7	S104 B2		
4103 B3	S105 B3		
4104 A3	S106 B2		
4105 B9	S107 B3		
4106 F4	S109 C3		
4127 A10	S111 C3		
4128 B10	S113 D3		
5101 F4	S115 D3		
6121 F3	S117 E3		
6143 E10	S119 F3		
7119 E3	S121 F3		
7138 D9	S126 B11		

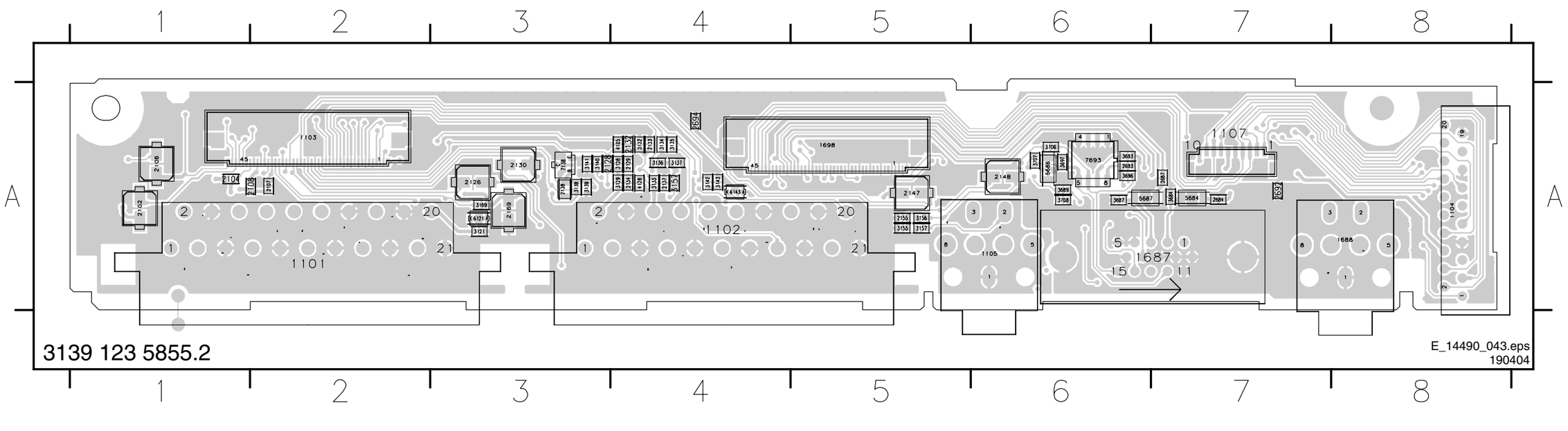
Rear IO Panel: PCHD-IO (23”/26”)



1687 A1 I706 E9
1688 E1 I709 C9
1698 B9 I710 A6
2681 C6 I711 E1
2683 A6 S698 E2
2684 A6 S699 E2
2686 C6
2687 B6
2688 A3
2689 A5
2690 A5
2691 B5
2692 C4
2693 C2
2694 C4
2698 E3
2699 E4
2704 C1
2705 C2
3681 B5
3683 A5
3684 A5
3686 B5
3687 B5
3689 D5
3693 C3
3696 C3
3697 C4
3698 E2
3699 E2
3700 E3
3701 E4
3702 A3
3706 C4
3707 D4
3708 D6
5683 A5
5684 A5
5686 A4
5687 B5
6693 A3
7693 D2
I680 B9
I681 C9
I682 A2
I683 A2
I684 B2
I685 A1
I686 A2
I687 B2
I688 B2
I690 D9
I691 B2
I692 B2
I693 C9
I694 C9
I695 C9
I696 D9
I697 D9
I698 C2
I699 E9
I700 E9
I701 E2
I702 E2
I703 A3
I704 A4
I705 C9

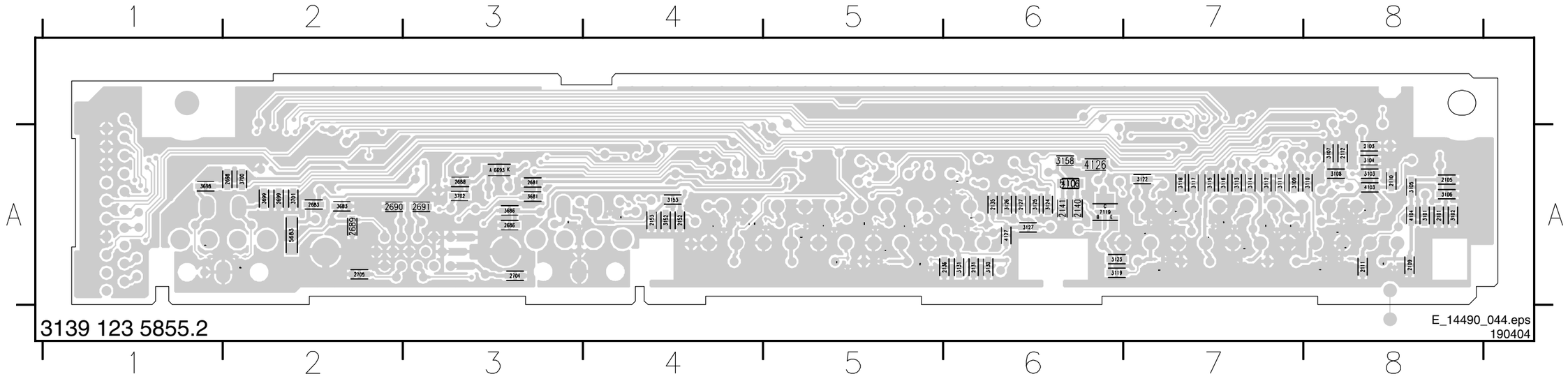
Layout Rear IO Panel (23”/26”) (Top Side)

1101 A2	1105 A6	1698 A5	2107 A2	2129 A4	2134 A4	2148 A6	2684 A7	2694 A4	3132 A4	3136 A4	3140 A3	3155 A5	3684 A7	3696 A6	3708 A6	5686 A6	7138 A3
1102 A4	1107 A7	2102 A1	2108 A2	2130 A3	2137 A4	2155 A5	2687 A7	3121 A3	3133 A4	3137 A4	3141 A3	3156 A5	3687 A6	3697 A6	4105 A4	5687 A6	7693 A6
1103 A2	1687 A7	2104 A1	2126 A3	2132 A4	2138 A3	2157 A5	2692 A7	3128 A4	3134 A4	3138 A3	3142 A4	3157 A4	3689 A6	3706 A6	4128 A4	6121 A3	
1104 A8	1688 A8	2106 A1	2128 A3	2133 A4	2147 A5	2169 A3	2693 A6	3129 A4	3135 A4	3139 A3	3143 A4	3169 A3	3693 A6	3707 A6	5684 A7	6143 A4	

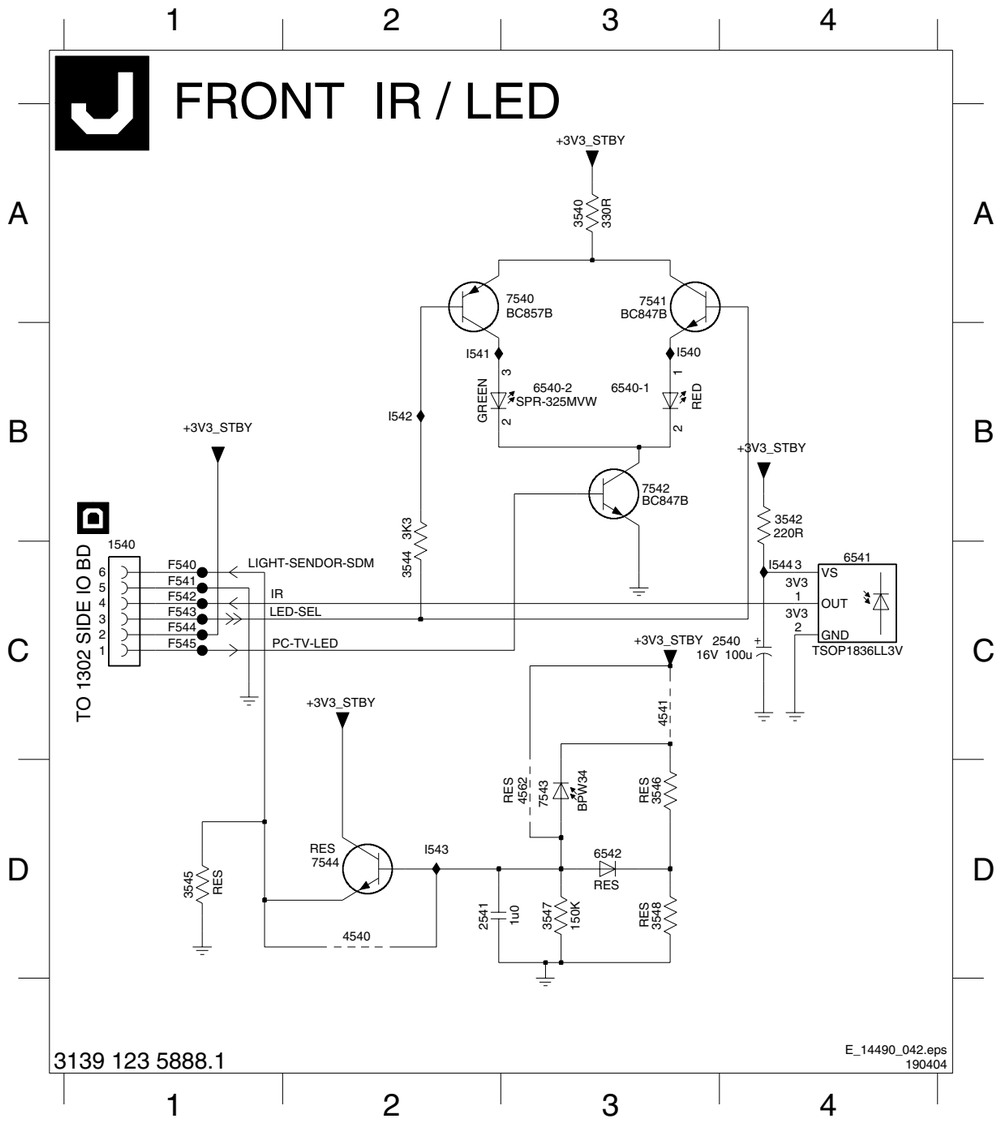


Layout Rear IO Panel (23”/26”) (Bottom Side)

2101 A8	2110 A8	2131 A6	2141 A6	2683 A2	2690 A2	2704 A3	3103 A8	3107 A8	3111 A7	3115 A7	3119 A6	3125 A6	3131 A6	3681 A3	3699 A2	4103 A8	4127 A6	7119 A6
2103 A8	2111 A8	2135 A6	2152 A4	2686 A3	2691 A3	2705 A2	3104 A8	3108 A8	3112 A7	3116 A7	3122 A7	3126 A6	3152 A4	3683 A2	3700 A2	4104 A8	5101 A6	
2105 A8	2112 A8	2136 A6	2153 A4	2688 A3	2698 A2	3101 A8	3105 A8	3109 A7	3113 A7	3117 A7	3123 A6	3127 A6	3153 A4	3686 A3	3701 A2	4106 A6	5683 A2	
2109 A8	2127 A6	2140 A6	2681 A3	2689 A2	2699 A2	3102 A8	3106 A8	3110 A8	3114 A7	3118 A7	3124 A6	3130 A6	3158 A6	3698 A1	3702 A3	4126 A6	6693 A3	



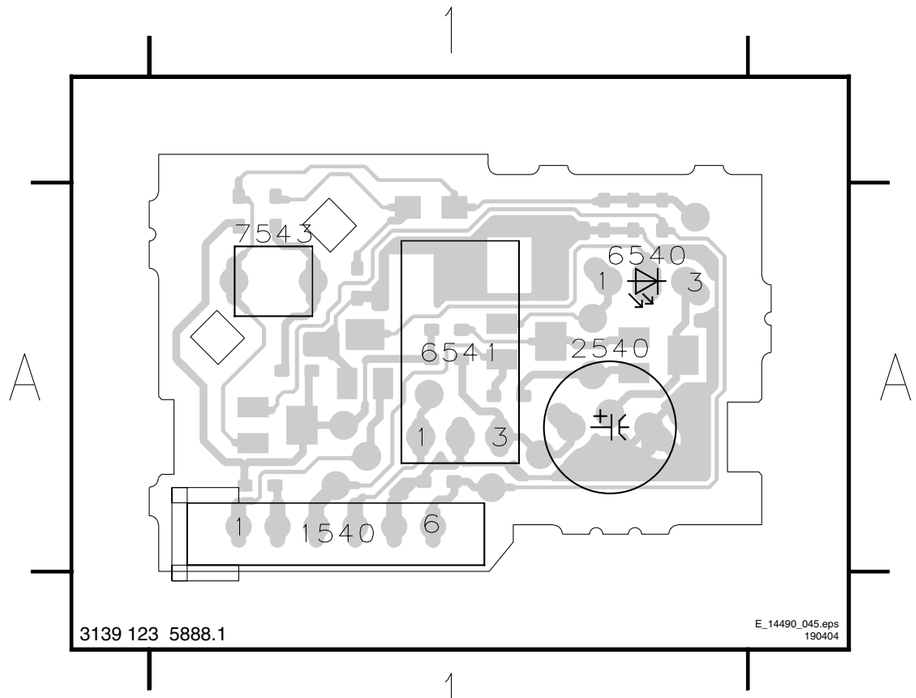
Front IR / LED Panel



1540 B1
2540 C4
2541 D2
3540 A3
3542 B4
3544 C2
3545 D1
3546 D3
3547 D3
3548 D3
4540 D2
4541 C3
4562 D3
6540-1 B3
6540-2 B3
6541 C4
6542 D3
7540 A3
7541 A3
7542 B3
7543 D3
7544 D2
F540 C1
F541 C1
F542 C1
F543 C1
F544 C1
F545 C1
I540 B3
I541 B2
I542 B2
I543 D2
I544 C4

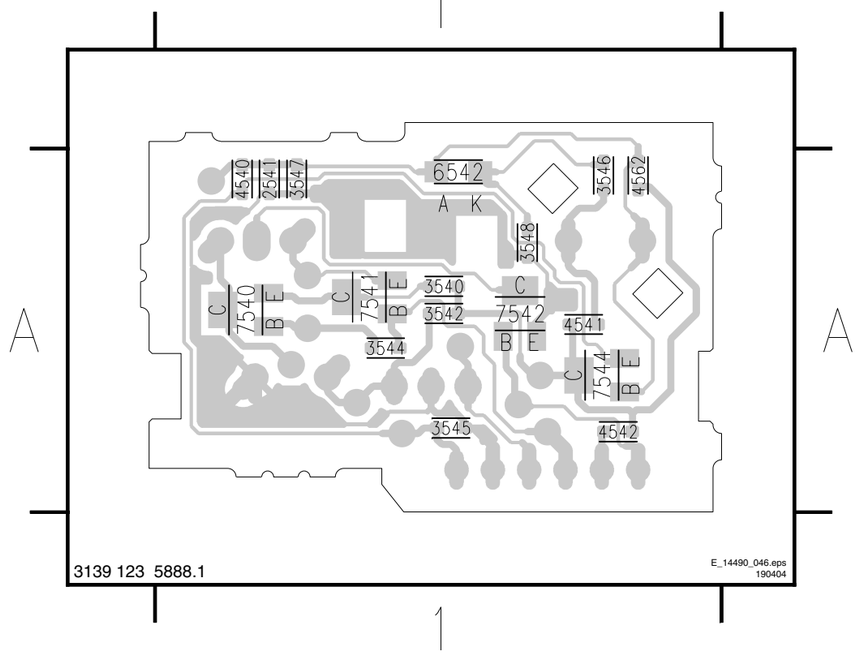
Layout Front IR / LED Panel (Top Side)

1540 A1 2540 A1 6540 A1 6541 A1 7543 A1



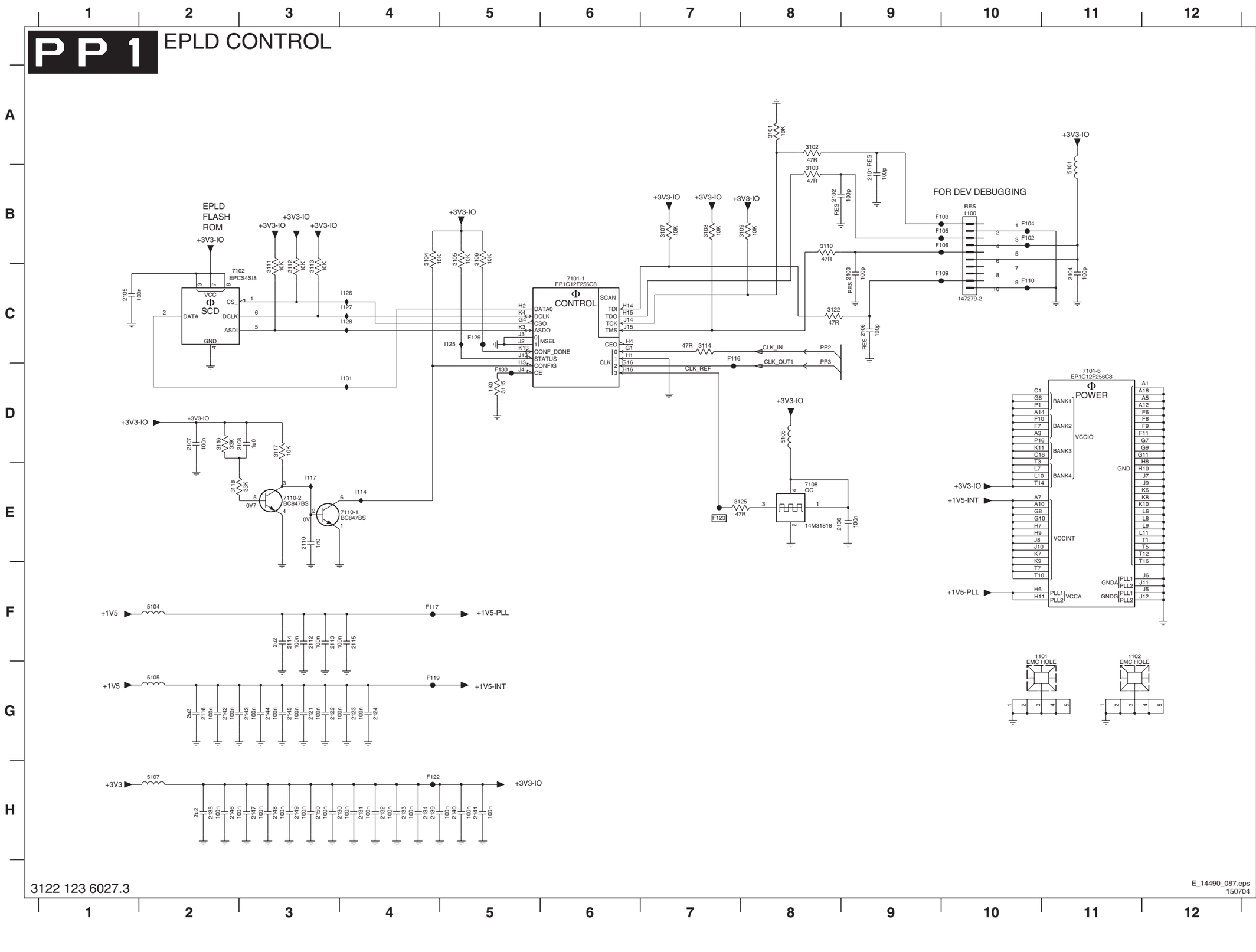
Layout Front IR / LED Panel (Bottom Side)

2541 A1 3544 A1 3547 A1 4541 A1 6542 A1 7542 A1
3540 A1 3545 A1 3548 A1 4542 A1 7540 A1 7544 A1
3542 A1 3546 A1 4540 A1 4562 A1 7541 A1



Pixel Plus Panel: EPLD Control

PP1 EPLD CONTROL



3122 123 6027.3

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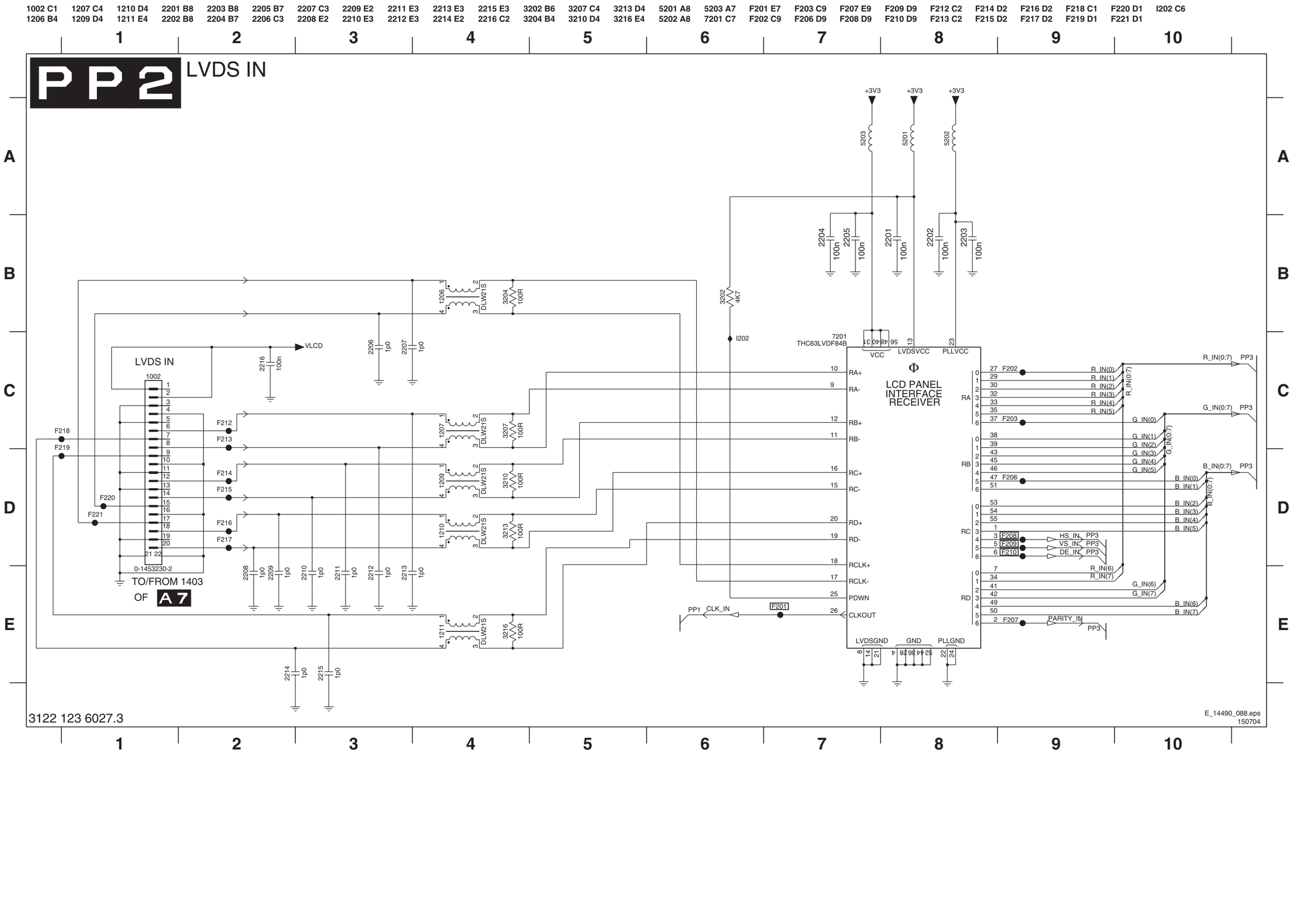
1100 B10
1101 F11
1102 F11
2101 B9
2102 B8
2103 C9
2104 C11
2105 C1
2106 C9
2107 D2
2108 D3
2110 E3
2112 F3
2113 F3
2114 F3
2115 F4
2116 G2
2121 G3
2122 G3
2123 G4
2124 G4
2130 H3
2131 H4
2132 H4
2133 H4
2134 H4
2135 H2
2136 E9
2139 H4
2140 H5
2141 H5
2142 G2
2143 G3
2144 G3
2145 G3
2146 H2
2147 H3
2148 H3
2149 H3
2150 H3
3101 A8
3102 A8
3103 B8
3104 B4
3105 B5
3106 B5
3107 B7
3108 B7
3109 B8
3110 B8
3111 C3
3112 C3
3113 C3
3114 C7
3115 D5
3116 D2
3117 D3
3118 E2
3122 C8
3125 E8
5101 B11
5104 F2
5105 G2
5106 D8
5107 H2
7101-1 C6
7101-6 D11
7102 C2
7108 E8
7110-1 E4
7110-2 E3
F102 B10
F103 B10
F104 B10
F105 B10
F106 B10
F109 C10
F110 C10
F116 C7
F117 F4
F119 G4
F122 H4
F123 E7
F129 C5
F130 D5
I114 E4
I117 E3
I125 C5
I126 C4
I127 C4
I128 C4
I131 D4

Pixel Plus Panel: LVDS In



Pixel Plus Panel: EPLD I/O

PP3 EPLD I/O

LVDS TRANSMITTER

LVDS IN
7101-2
EP1C12F256C8
BANK 1

CONTROL SIGNALS
7101-5
EP1C12F256C8
BANK 4

EAGLE INTERFACE
7101-3
EP1C12F256C8
BANK 2

LVDS OUT
7101-4
EP1C12F256C8
BANK 3

7403
THC63LVDM83R

LVDS OUT
1003
0-1453230-2

TO LCD PANEL

UART IN

ADD COLOUR AND FUNCTION

1003 D11
1403 D10
1404 E10
1405 F10
1406 G10
1407 C10
2401 B8
2402 B8
2403 B8
2404 B9
2405 B9
2406 D10
2407 D10
2408 E10
2409 E10
2410 F10
2411 F10
2412 G10
2413 G10
2414 C10
2415 C10
2416 C7
2417 C7
2418 C7
2419 D12
3402 C7
3403 C8
3405 D5
3406 C7
3407 B6
3416 B6
3417 B6
3418 B6
3420 F4
3421 B3
3424 G4
5401 B8
5402 B9
5403 B9
6401 H3
6402 H4
6403 D5
7101-2 A3
7101-3 D3
7101-4 D5
7101-5 A5
7403 C9
F401 D7
F402 B7
F403 D11
F404 B7
F405 B7
F406 B7
F407 D7
F408 C4
F409 E12
F410 E12
F411 D7
F412 E12
F413 E7
F414 E7
F415 E7
F416 E7
F417 C7
F418 C7
F421 G5
F422 G5
F423 G5
F424 G5
F445 D11
F446 D11
F447 D12
F448 D12
F449 E11
F450 E11
F451 E11
F452 E11

3122 123 6027.3

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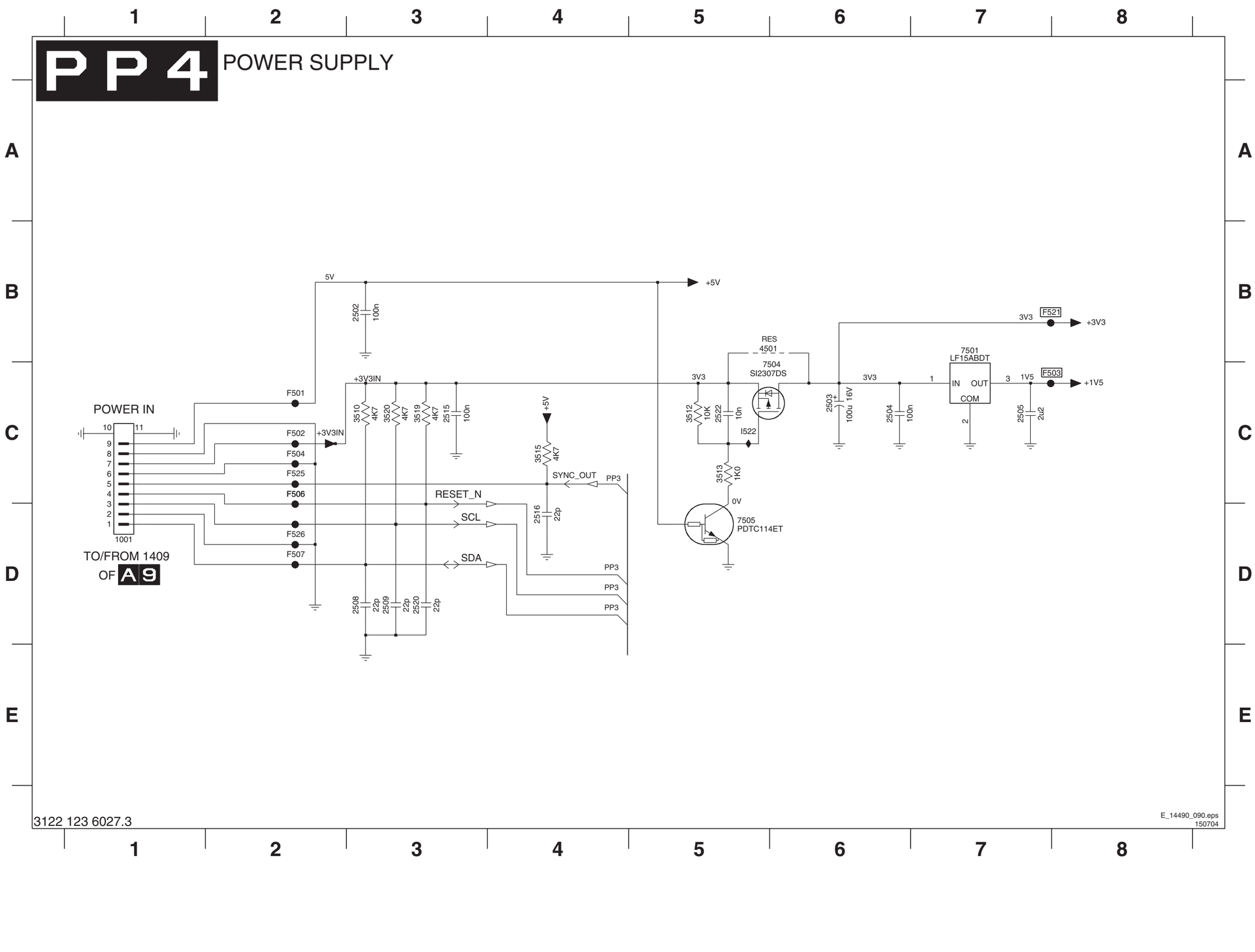
Pixel Plus Panel: Power Supply

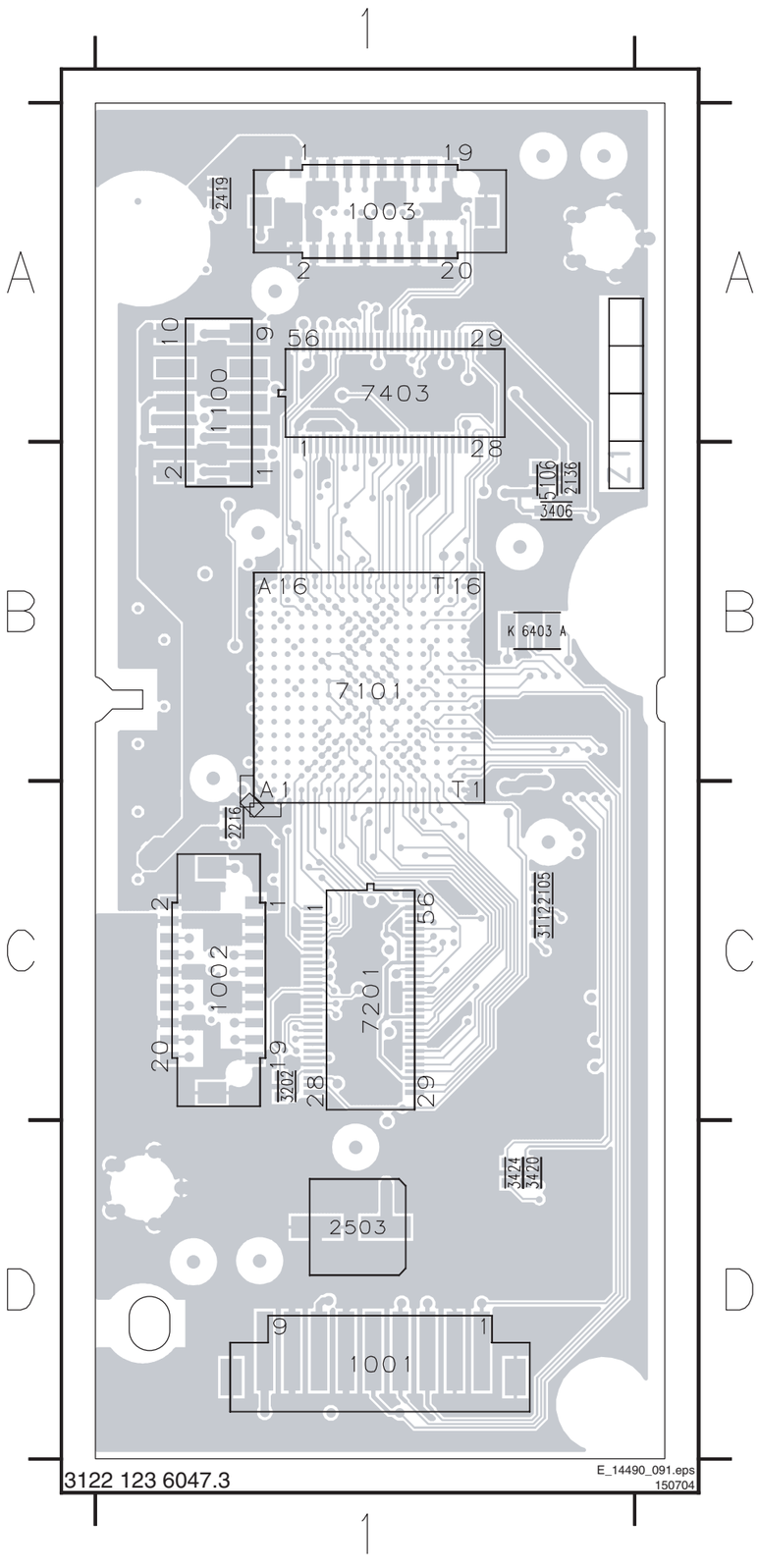
PP4 POWER SUPPLY



3122 123 6027.3

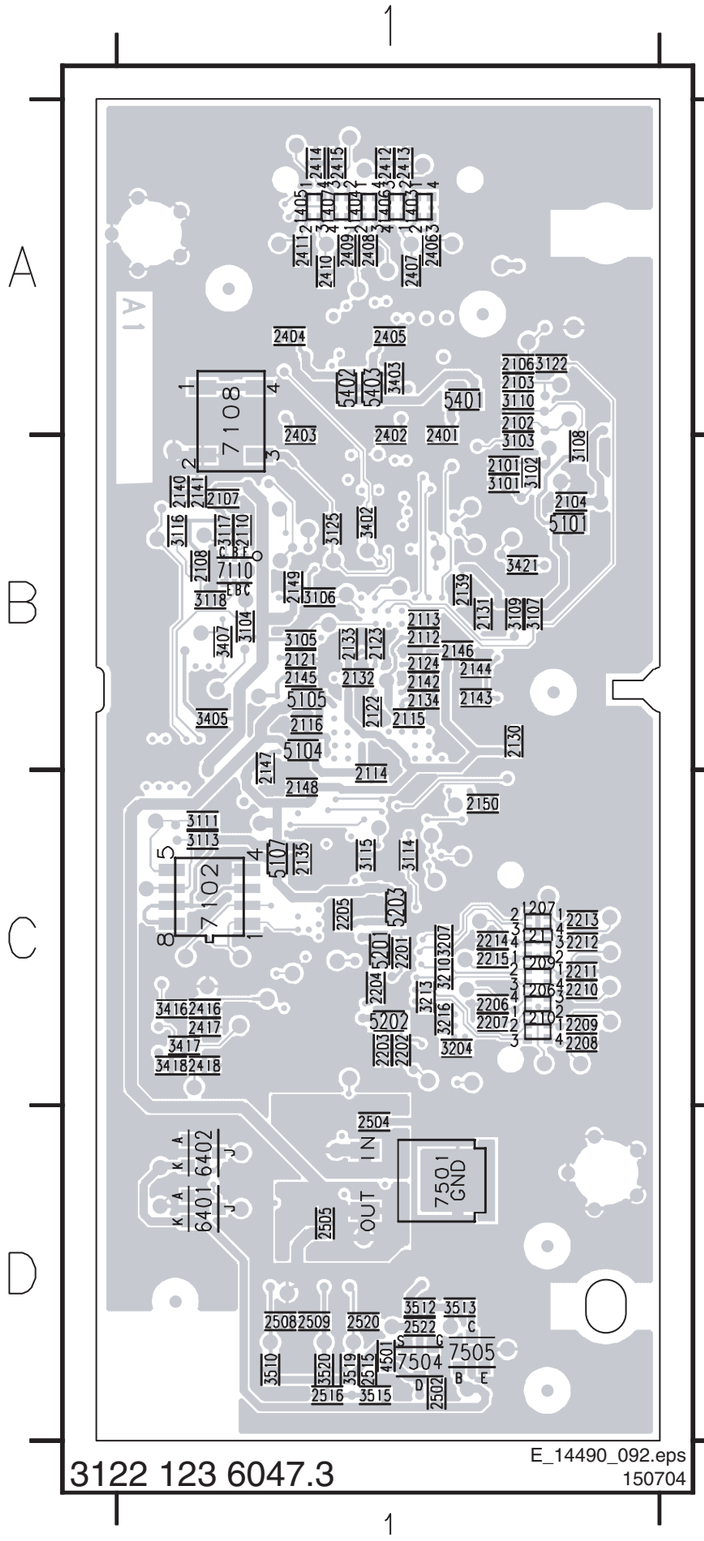
1001 D1
2502 B3
2503 C6
2504 C6
2505 C7
2508 D3
2509 D3
2515 C3
2516 D4
2520 D3
2522 C5
3510 C3
3512 C5
3513 C5
3515 C4
3519 C3
3520 C3
4501 B5
7501 B7
7504 C6
7505 D5
F501 C2
F502 C2
F503 C7
F504 C2
F505 C2
F506 C2
F507 D2
F521 B7
F525 C2
F526 D2
I522 C5

Layout Pixel Plus Panel (Top Side)



1001 D1
1002 C1
1003 A1
1100 A1
2105 C1
2136 B1
2216 C1
2419 A1
2503 D1
3112 C1
3202 C1
3406 B1
3420 D1
3424 D1
5106 B1
6403 B1
7101 B1
7201 C1
7403 A1

Layout Pixel Plus Panel (Bottom Side)



1206 C1
1207 C1
1209 C1
1210 C1
1211 C1
1403 A1
1404 A1
1405 A1
1406 A1
1407 A1
2101 B1
2102 A1
2103 A1
2104 B1
2106 A1
2107 B1
2108 B1
2110 B1
2112 B1
2113 B1
2114 C1
2115 B1
2116 B1
2121 B1
2122 B1
2123 B1
2124 B1
2130 B1
2131 B1
2132 B1
2133 B1
2134 B1
2135 C1
2139 B1
2140 B1
2141 B1
2142 B1
2143 B1
2144 B1
2145 B1
2146 B1
2147 B1
2148 C1
2149 B1
2150 C1
2201 C1
2202 C1
2203 C1
2204 C1
2205 C1
2206 C1
2207 C1
2208 C1
2209 C1
2210 C1
2211 C1
2212 C1
2213 C1
2214 C1
2215 C1
2401 B1
2402 B1
2403 B1
2404 A1
2405 A1
2406 A1
2407 A1
2408 A1
2409 A1
2410 A1
2411 A1
2412 A1
2413 A1
2414 A1
2415 A1
2416 C1
2417 C1
2418 C1
2502 D1
2504 D1
2505 D1
2508 D1
2509 D1
2515 D1
2516 D1
2520 D1
2522 D1
3101 B1
3102 B1
3103 B1
3104 B1
3105 B1
3106 B1
3107 B1
3108 B1
3109 B1
3110 A1
3111 C1
3113 C1
3114 C1
3115 C1
3116 B1
3117 B1
3118 B1
3122 A1
3125 B1
3204 C1
3207 C1
3210 C1
3213 C1
3216 C1
3402 B1
3403 A1
3405 B1
3407 B1
3416 C1
3417 C1
3418 C1
3421 B1
3510 D1
3512 D1
3513 D1
3515 D1
3519 D1
3520 D1
4501 D1
5101 B1
5104 B1
5105 B1
5107 C1
5201 C1
5202 C1
5203 C1
5401 A1
5402 A1
5403 A1
6401 D1
6402 D1
7102 C1
7108 A1
7110 B1
7501 D1
7504 D1
7505 D1

Personal Notes:

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8. Alignments

General: The Service Default Mode (SDM) and Service Alignment Mode (SAM) are described in chapter 5. Menu navigation is done with the cursor Up, Down, Left or Right keys of the remote control transmitter.

8.1 General Alignment Conditions

Perform all electrical adjustments under the following conditions:
Mains voltage and frequency: 100-240 V / 50/60 Hz.
Allow the set to warm up for approximately 10 minutes.
Test probe: Ri > 10 M ohm; Ci < 2.5 pF.

8.3.1 SAM Menu

Figure 8-1 SAM Menu

8.2 Hardware Alignments

There are no hardware alignments foreseen for the LCD-TV.

8.3 Software Alignments

With the software alignments of the Service Alignment Mode (SAM) the geometry, white tone and tuner (IF) can be aligned. To store the data: Use the RC button Menu to switch to the main menu and next, switch to 'Stand-by' mode.

8.3.2 White Tone

In the White Tone sub menu the colour values for the colour temperature values can be changed.
The colour temperature mode (Normal, Delta Cool, Delta Warm) or the colour (R, G, B) can be selected with the Right/ Left cursor keys. The mode or value can be changed with the Up/Down cursor keys.
First the values for the Normal colour temperature should be selected. Range: 0-255, 128 represent the middle of the value (no offset difference). Then the offset values for the Delta Cool and Delta Warm mode can be selected. Note that the alignment values are non-linear. The range is: -50 to +50, 0 represents the middle value, (no offset difference).

Input signal strength: >=10 mV rms (80 dBμV) terminal voltage.
Input injection point: Aerial input.

Alignment Method

Initial Set-up
- 12 minutes soaking time before carrying out Colour Temp alignment.
- Incredible Picture/Contrast+ and Active Control & Light Sensor must be switched Off for proper tracking.
- Set all colour temperature settings to their initial values, i.e. Red=135; Green=128; Blue=133.
- The offset values for Cool & Warm should be preloaded into NVM.
- The alignment is done for Normal only.

Method of alignments
1. Place the colour sensor of the meter at the centre of the screen with standard orientation (at 0 degree orientation).
2. Set the meter in (T, delta UV, Y) mode.
3. Set Brightness and Colour to nominal (Factory mode, Brightness 60).
4. Set Colour temp to normal.
5. Set Contrast to make the light output Y on the meter 250 nit +/-10%.
6. Set Green=128.
7. Adjust Red and Blue to bring delta UV and T to the value as in the table.
8. Repeat the procedure if necessary to obtain the values as in the table.

Expected Results
- Measured parameters: Refer to table,
- Specifications: Refer to table,
- Units of measurement: Kelvin.

Table 8-1 Colour temperatures

Colour temp.	NORMAL		COOL		WARM	
	T (K)	ΔUV	T (K)	ΔUV	T (K)	ΔUV
EUROPE	8500	-003	11500	-005	7000	-005
Tolerance	+/-10%	+/-003	+/-10%	+/-003	+/-10%	+/-003

8.3.3 Tuner Adjustment

AGC (RF AGC Take Over Point)
Set pattern generator (e.g. PM5580) with colour bar pattern and connect to aerial input with RF signal amplitude - 10mV and set frequency for PAL/SECAM to 475.25 MHz. For France select the L'-signal.
- Activate the SAM-menu. Go to the sub-menu Tuner, select the sub-menu option AFC Window and adjust the value to 100kHz.
- Select the AGC sub-menu.
- Connect a DC multi-meter to F306 pin1 of the tuner.
- Adjust the AGC until the voltage at pin 1 of the tuner is 3.3 Volts +0.5 / -1.0.
- The value can be incremented or decremented by pressing the right/left Menu-button on the RC.
- Switch the set to standby to store the data.

8.3.4 Grey Scale Adjustment

SDTV Grey Scale Adjustment

Equipment and setting
- E.g. Fluke 54200 or Philips PM5580.
- 100% "8-step grey scale" pattern.

Alignment Method
- Switch to TV mode,
- Press the MUTE button on RC,
- Set SMART PICTURE to SOFT mode,
- Activate the auto color function by pressing key-sequence: "INFO - MUTE - MUTE - MUTE - INFO - MENU - INFO"

Expected Results
- Visual check if the 8 Grey levels are correct.

Analog PC Grey Scale Adjustment

Equipment and setting
- Quantum Data 802B.
- PC input signal, with 64 levels Grey scale pattern, 1024x768 @ 60Hz (Format= 81:DMT1060, Pattern= 123:Grey 64).
- PC input at D-sub VGA connector.

Alignment Method
- Switch to "PC" mode.
- Press the MUTE button on RC.
- Set BRIGHTNESS and CONTRAST to nominal "50".
- Activate the auto color function by pressing key-sequence: "INFO - MUTE - MUTE - MUTE - INFO - MENU - INFO".

Expected Results
- Visual check if the 64 Grey levels are correct.

HD Grey Scale Adjustment

Equipment and setting
- Quantum Data 802B.
- HD input signal, Top half 100% color bar and bottom half Grey scale pattern,1920x1080i@60Hz YPbPr (Format= 1080i30, Pattern= HDBar100).
- HD input at D-sub VGA connector.

Alignment Method
- Switch to HD mode.
- Press the MUTE button on RC.
- Activate the auto color function by pressing key-sequence: "INFO - MUTE - MUTE - MUTE - INFO - MENU - INFO".

Expected Results
- Visual check if Color bar tint and Grey scale is correct.

8.3.5 Sound

No adjustments needed for sound.

The default values for the audio alignments are:
- QSS: On
- FMI: Off
- NICAM Alignment: 63
- Lip Sync: Off
- DBE: Off

8.3.6 Options

Options are used to control the presence/absence of certain features and hardware.

How to change an Option Byte
An Option Byte represents a number of different options. Changing these bytes directly makes it possible to set all options very fast. All options are controlled via seven option bytes. Select the option byte (OP1.. OP7) with the Menu Up/ Down keys, and enter the new value.

Leaving the OPTION submenu saves the changes in the Option Byte settings. Some changes will only take effect after the set has been switched “off” and “on” with the AC power switch (cold start).

Note: The option values mentioned in the table below are subject to change.

Table 8-2 Option values per model

	17PF9946/12		23PF9946/12		26PF9946/12	
Option Byte	**Total Dec Values**	**Total Hex Values**	**Total Dec Values**	**Total Hex Values**	**Total Dec Values**	**Total Hex Values**
OP1	154	9A	154	9A	154	9A
OP2	21	15	21	15	21	15
OP3	14	0E	14	0E	14	0E
OP4	17	11	17	11	17	11
OP5	252	FC	252	FC	252	FC
OP6	27	1B	27	1B	27	1B
OP7	3	03	3	03	3	03

	23PF9956/12		26PF9956/12	
Option Byte	**Total Dec Values**	**Total Hex Values**	**Total Dec Values**	**Total Hex Values**
OP1	154	9A	154	9A
OP2	21	15	21	15
OP3	14	0E	14	0E
OP4	17	11	17	11
OP5	252	FC	252	FC
OP6	27	1B	27	1B
OP7	3	03	3	03

9. Circuit Descriptions, Abbreviation List, and IC Data Sheets

Index of this chapter
1. Introduction
2. Block Diagram
3. Power Supply
4. Input/Output
5. Tuner and IF
6. Video: TV Part
7. Video: Scaler Part
8. Audio Processing
9. Control
10. LCD Display
11. Abbreviation List
12. IC Data Sheets

9.1 Introduction

The LC4.2 LCD TV is a global LCD TV for the year 2004. It is the successor of the LC03 LCD TV and covers screens sizes 17, 23 and 26 inch (all in 16:9 ratio) and has a new styling, called Disc.
This chassis has the following (new) features:

- **Audio**: The sound processor is part of the UOC processor (called “Hercules”). The chassis has a FM Radio with 40 preset channels.
- **Video**: Enhanced video features, video drivers, Active Control and multiple PIP.

The architecture consists of a TV and Scaler panel, I/O panel, Side I/O and Local Keyboard panel and Power Supply panel. The functions for video/audio processing, microprocessor (P), and CC/Teletext (TXT) decoder are all combined in one IC (TDA120xx, item 7011), the so-called third generation Ultimate One Chip (UOC-III) or “Hercules”. This chip has the following features:

- Control, small signal, mono/stereo, and extensive Audio/ Video switching in one IC.
- Upgrade with digital sound & video processing.
- Alignment free IF, including SECAM-L/L1 and AM.
- FM sound 4.5/5.5/6.0/6.5, no traps/bandpass filters.
- Full multi-standard color decoder.
- One Xtal reference for all functions (microprocessor, RCP, TXT/CC, RDS, color decoder, and stereo sound processor).

9.2 Block Diagram

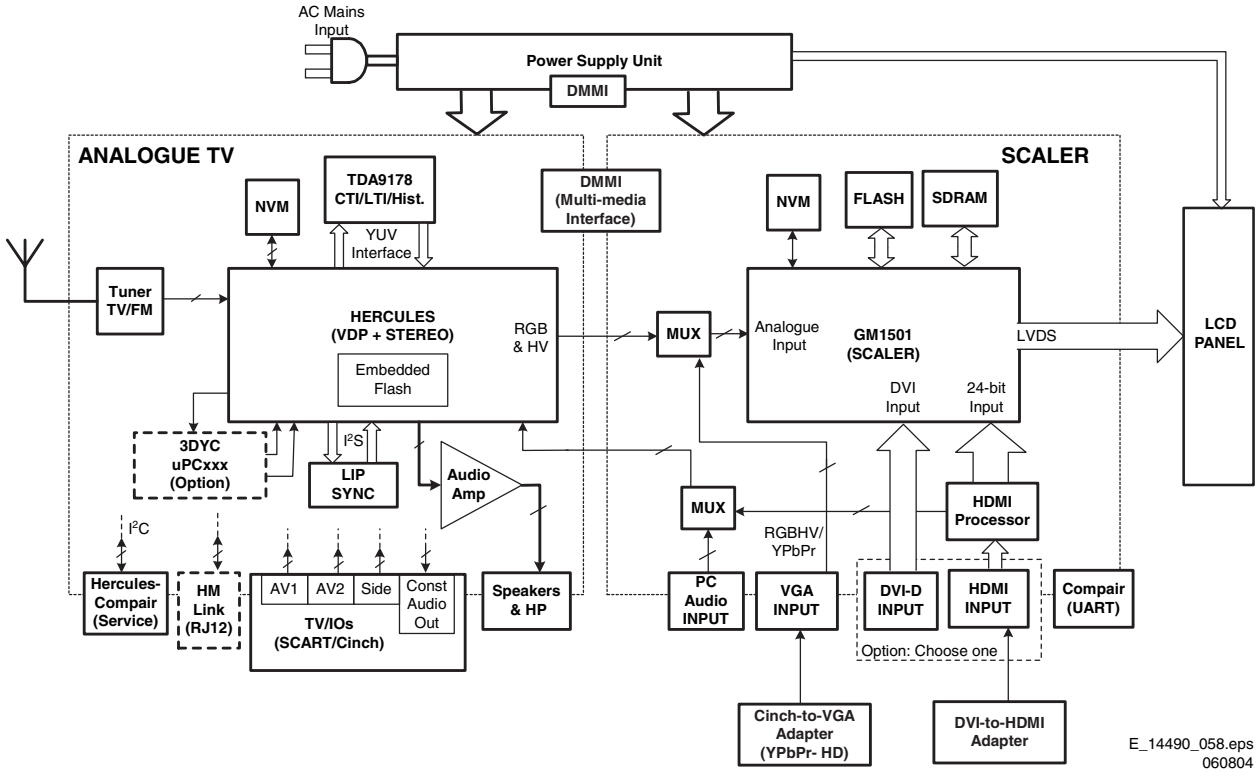


Figure 9-1 Block Diagram LC4.2

The PLL tuner UR1316 (with FM radio) delivers the IF-signal, via audio & video SAW-filters, to the Video Signal Processor and FLASH embedded TEXT/Control/Graphics Micro Controller TDA120x1 (item 7011, also called Hercules). This IC has the following functions:

- Analogue Video Processing
- Sound Demodulation
- Audio Interfaces and switching
- Volume and tone control for loudspeakers
- Reflection and delay for loudspeaker channels
- Micro Controller
- Data Capture
- Display

The Hercules has one input for the internal CVBS signal and a video switch with 3 external CVBS inputs and a CVBS output. All CVBS inputs can be used as Y-input for Y/C signals. However, only 2 Y/C sources can be selected because the circuit has 2 chroma inputs. It is possible to add an additional CVBS(Y)/C input (CVBS/YX and CX) when the YUV interface and the RGB/YPRPB input are not needed. Two SCART-connectors are used: SCART1 is fully equipped and SCART2 is meant for VCR. Pin 10 of SCART2 is used for Easylink (P50) and there is a possibility for Y/C in. The CVBS-out on pin 19 can be used for WYSIWYR (What You See Is What You Record).

The video part delivers the RGB signals to the Scaler IC.

The Genesis GM1501 Malibu Scaler IC can receive two video input signals: SDTV (from Hercules), DVI (from external DVI source), or PC (from external computer).
After the video processing, the digital data is send via a Low Voltage Differential Signalling bus to the LCD panel. LVDS is used to improve data speed and to reduce EMI significantly. There are two I2C lines and two interrupt and communication lines (TV_IRQ and TV_SC_COM) for the Scaler control. The Scaler communicates with the Hercules as a slave device. To avoid buffer overflow at the Scaler side, the TV_SC_COM line provides the necessary hardware flow control. To allow bi-directional communication, the Scaler can initiate a service interrupt-request to the Hercules via the TV_IRQ line.

The Hercules, and EEPROM are supplied with 3.3 V, which is also present during STANDBY.
The EEPROM, or NVM (Non Volatile Memory) is used to store the settings.

The sound part is built up around the Hercules. The Source Selection, Decoding and Processing are all done by the Hercules.

Power supply input are several DC voltages coming from a supply panel.

9.3 Power Supply

For Service, this supply panel is a black box. When defect (this can be traced via the fault-finding tips, or by strange phenomena), a new panel must be ordered (see table below for ordering codes), and after receipt, the defective panel must be send for repair.

Table 9-1 Ordering Codes Power Supply

Screen size (inches)	Ordering Code
17	3122 137 23040
23	3122 137 23070
26	3122 137 23080

9.4 Input/Output

The I/O is divided over two parts: Rear I/O and Side I/O. The rear has two SCART inputs, a PC (VGA) input, a DVI input, and an Audio input. The side has a CVBS and Y/C (SVHS) input.

EXT1: The input of SCART1 is CVBS + RGB + L/R and the output is the video (+ sound) signal from the tuner (SC1_CVBS_RF_OUT).

EXT2: The input of SCART2 is Y/C + CVBS + L/R. The output signal is CVBS_SC2_MON_OUT (+ sound).
SCART2 is meant for VCR and has therefore some additional signals in relation to EXT1 but no RGB: it has the possibility for Y/C_in: Y_in on pin 20 and Chroma_in on pin 15.
The selection of the external I/O's is controlled by the Hercules.

PC (VGA) in: This input is directly going to the Scaler IC. See paragraph “Video: Scaler Part”.

DVI-D in: This input is directly going to the Scaler IC. See paragraph “Video: Scaler Part”.

9.5 Tuner and IF

A Philips UR13xx Tuner with second input (for FM Radio) is used in the TV board. The SIF and FM signals are decoded by the Hercules. Tuning is done via I2C.

9.5.1 Video IF amplifier

The IF-filter is integrated in a SAW (Surface Acoustic Wave) filter. One for filtering IF-video (1328) and one for IF-audio (1330). The type of these filters is depending of the standard(s) that has to be received.

The output of the tuner is controlled via an IF-amplifier with AGC-control. This is a voltage feedback from pin 31 of the Hercules to pin 1 of the tuner. The AGC-detector operates on top sync and top white level. AGC take-over point is adjusted via the service alignment mode ’Tuner' - 'AGC’. If there is too much noise in the picture, then it could be that the AGC setting is wrong. The AGC-setting could also be mis-aligned if the picture deforms with perfect signal; the IF-amplifier amplifies too much.

9.6 Video: TV Part (diagrams A1, A2, and A3)

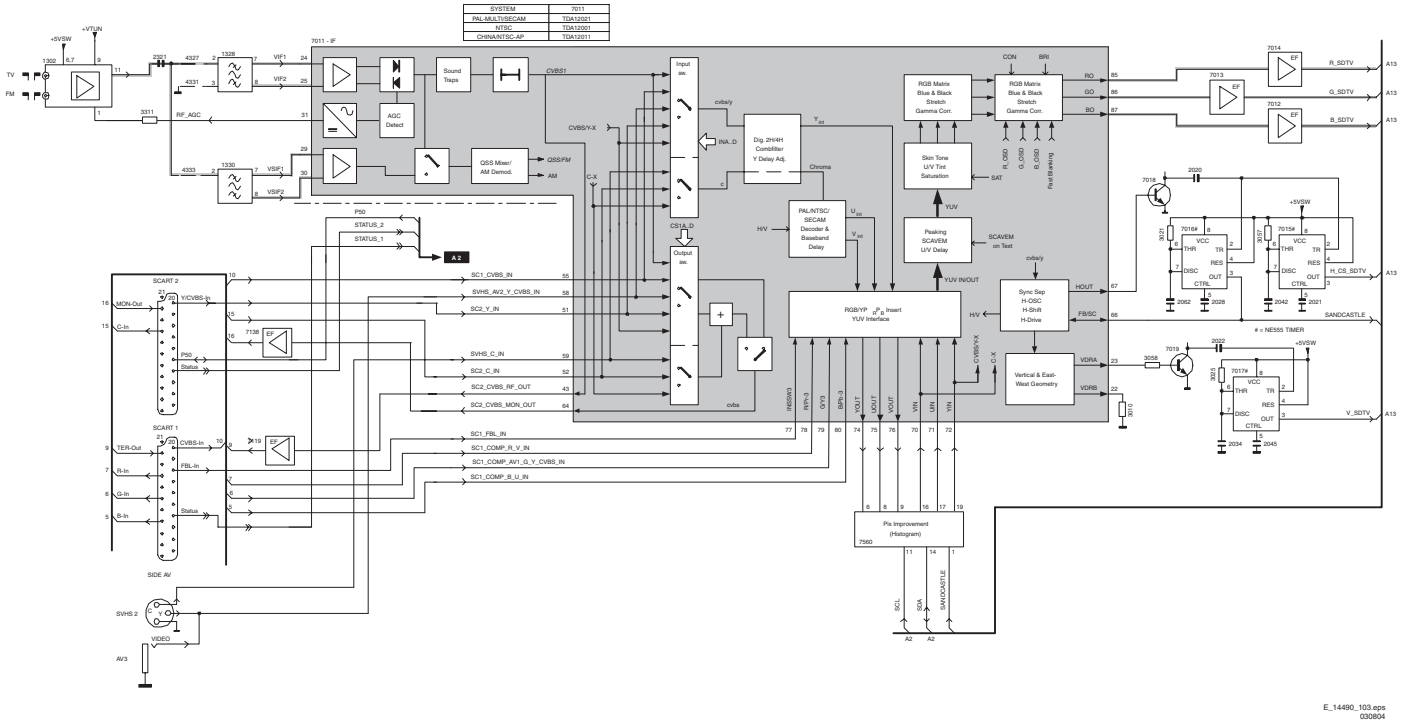


Figure 9-2 Block diagram video processing

The video processing is completely handled by the Hercules

- IF demodulator.
- Chrominance decoder
- Sync separator.
- Horizontal & vertical drive.
- RGB processing.
- CVBS and SVHS source select.

It has also build in features like:

- CTI.
- Black stretch.
- Blue stretch.
- White stretch.
- Slow start up.
- Dynamic skin tone correction etc.

Further, it also incorporates sound IF traps and filters, and requires only one crystal for all systems.

9.6.1 Histogram (YUV picture improvement) IC

The demodulated video-signal can be checked on pins 74, 75, and 76 of IC7011 and is fed to pins 70, 71, and 72. In this path, the Histogram IC TDA9171 is inserted.
This TDA9178 can control various picture improvements:

- Histogram processing.
- Colour transient improvement.
- Luminance transient improvement.
- Black and white stretch.
- Skin tone correction.
- Green enhancement.
- Blue stretch.
- Smart peaking.
- Video dependent coring.
- Colour dependent stretching.

Since the TDA9171 is connected to the Hercules, picture improvement works only for signals that are routed trough the Hercules and not for signals directly connected to the Scaler.

9.7 Video: Scaler Part (diagram A7 and A13)

The Genesis gm1501 Scaler is a dual channel graphics and video processing IC for LCD monitors and televisions incorporating Picture in Picture, up to SXGA output resolutions. The Scaler controls the display processing in an LCD TV, e.g. like the deflection circuit in a CRT-based TV. It controls all the view modes (e.g. like "zooming" and "shifting"). Features like PC (VGA) or HD inputs, are also handled by this part.

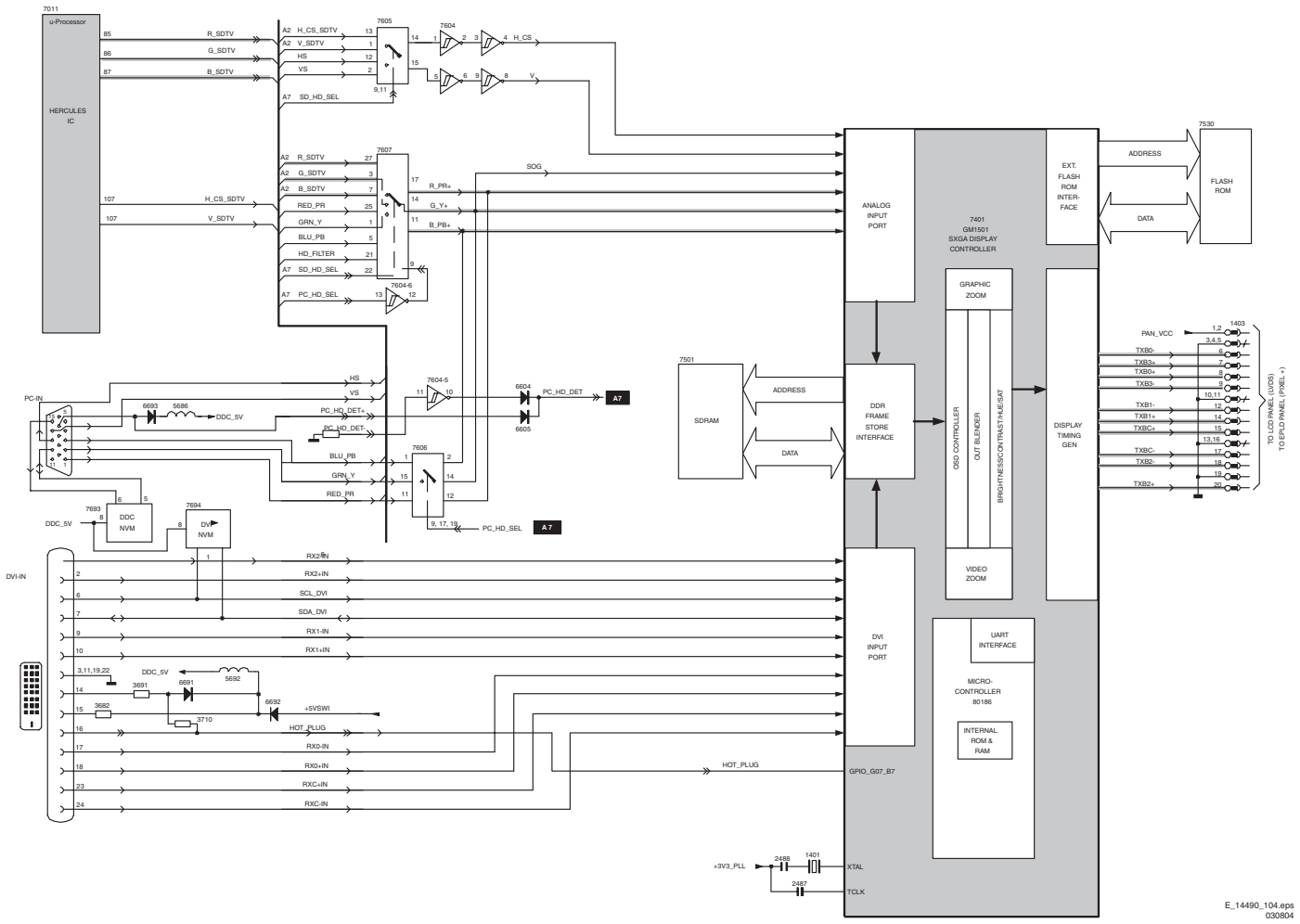


Figure 9-3 Block diagram Scaler Part

9.7.1 Features

The Scaler provides several key IC functions:
- Scaling.
- Auto-configuration/ Auto-Detection.
- Various Input Ports:
  - Analog RGB.
  - DVI Compliant.
  - Video Graphics.
- Integrated LVDS Transmitter.
- On-chip Micro-controller

9.7.2 Inputs

Analog RGB
The RGB input is fed to pins B2, C2 and D2. This input consists of either the Hercules RGB output or the RGB/YpbPr input of the VGA connector. The Scaler can switch between the two signals via the PC_HD_SEL signal and selection IC SM5301.

PC (VGA) input
The VGA input is processed by the VGA block of the Scaler. The Scaler supports pixel frequencies up to 165MHz. YpbPr format is also supported via the VGA interface and covers a resolution of 480p/560p/720p/1080i.

DVI-D input
The DVI-D input is processed by the Scaler and supports DVI sources with a pixel clock frequency up to 81MHz.

9.7.3 Output

The Display Output Port provides data and control signals that permit the Scaler to connect to a variety of display devices using a TTL or LVDS interface. The output interface is configurable for single or dual wide TTL/LVDS in 18, 24 or 30-bit RGB pixels format. All display data and timing signals are synchronous with the DCLK output clock. The integrated LVDS transmitter is programmable to allow the data and control signals to be mapped into any sequence depending on the specified receiver format.

9.8 Video: Pixel Plus Part (diagram PP1 to PP4)

The Pixel Plus functionality is completely handled by an Electronic Programmable Logic Device, EPLD (item 7101 on diagram PP1, PP3). The LVDS output from the TV & Scaler Board is fed trough a LVDS receiver (item 7201 on diagram PP2) and then delivered to the EPLD. The EPLD processes the signal and it is fed to the LCD panel via a LVDS transmitter (item 7403 on diagram PP3).
The EPLD takes care of all picture improvement processing, like:
- Colour improvement
  - Blue stretch
  - Green enhancement
  - Saturation control
- Sharpness enhancement
  - Non-linear horizontal peaking
  - Non-linear vertical peaking
  - Coring, clipping

  - Sharpness meter
- Contrast improvement
- Gamma Look-Up Table

All other picture improvement processing is done in the Scaler.

9.9 Audio Processing

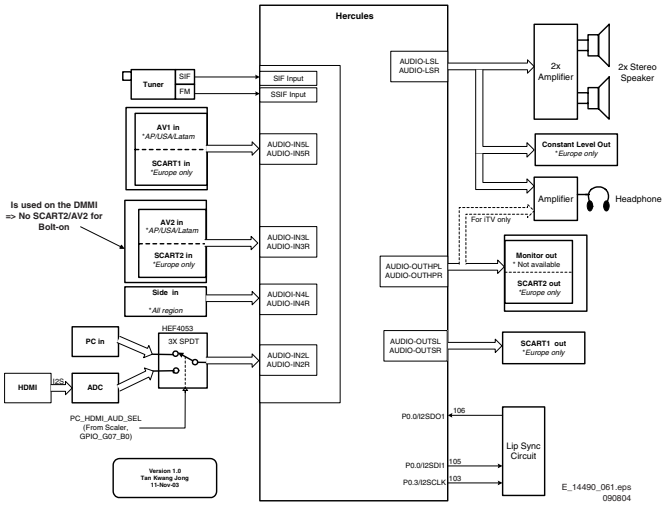


Figure 9-4 Block diagram audio processing

The audio decoding is done entirely via the Hercules. The IF output from the Tuner is fed directly to either the Video-IF or the Sound-IF input depending on the type of concept chosen. There are mainly two types of decoder in the Hercules, an analogue decoder that decodes only Mono, regardless of any standards, and a digital decoder (or DEMDEC) that can decode both Mono as well as Stereo, again regardless of any standards.

In this chassis, the analogue decoder is used in two cases:
- It is used for AM Sound demodulation in the Europe SECAM LL' transmission.
- It is used for all FM demodulation in AV-Stereo sets.

9.9.1 Diversity

The diversity for the Audio decoding can be broken up into two main concepts:
- The Quasi Split Sound concept used in Europe and some AP sets.
- The Inter Carrier concept, used in NAFTA and LATAM.

The UOC-III family makes no difference anymore between QSS- and Intercarrier IF, nearly all types are software-switchable between the two SAW-filter constructions.

Simple data settings are required for the set to determine whether it is using the Inter Carrier or the QSS concept. These settings are done via the "QSS" and "FMI" bit found in SAM mode. Due to the diversity involved, the data for the 2 bits are being placed in the NVM location and it is required to write once during startup.

On top of that, it can be further broken down into various systems depending on the region. The systems or region chosen, will in turn affect the type of sound standard that is/are allowed to be decoded.
- For the case of Europe, the standard consists of BG/DK/I/LL' for a Multi-System set. There are also versions of Eastern Europe and Western Europe set and the standard for decoding will be BG/DK and I/DK respectively. FM Radio is a feature diversity for the Europe sets. The same version can have either FM Radio or not, independent of the system (e.g. sets with BG/DK/I/LL' can have or not have FM radio).
- For the case of NAFTA and LATAM, there is only one transmission standard, which is the M standard. The diversity then will be based on whether it has a dBx noise reduction or a Non-dBx (no dBx noise reduction).
- For the case of AP, the standard consists of BG/DK/I/M for a Multi-System set. The diversity here will then depends on the region. AP China can have a Multi-System and I/DK version. For India, it might only be BG standard.

9.9.2 Functionality

The features available in the Hercules are as follows:
- Treble and Bass Control.
- Surround Sound Effect that includes:
  - Incredible Stereo.
  - Incredible Mono.
  - 3D Sound (not for AV Stereo).
  - TruSurround (not for AV Stereo).
  - Virtual Dolby Surround, VDS422 (not for AV Stereo).
  - Virtual Dolby Surround, VDS423 (not for AV Stereo).
  - Dolby Pro-Logic (not for AV Stereo).
- Bass Feature that includes:
  - Dynamic Ultra-Bass.
  - Dynamic Bass Enhancement.
  - BBE (not for AV Stereo).
- Auto-Volume Leveler.
- 5 Band Equalizer.
- Loudness Control.

All the features stated are available for the Full Stereo versions and limited features for the AV Stereo

9.9.3 Audio Amplifier

The audio amplifier part is very straightforward. It uses the integrated power amplifier TDA7297D, and delivers a maximum output of 2 x 15 W_rms.
The maximum operating condition for this amplifier is 20 V unloaded. Normal operating supply is from 6.5 V to 18 V.
Muting is done via the SOUND_ENABLE line connected to pin 13 of the amplifier-IC and coming from the Hercules.

9.9.4 Audio: Lip Sync

The LC4.2E is not equipped with Lip Sync. This is not needed.

9.10 Control

9.10.1 Hercules

The System Board has two main micro-controllers on board. These are:
- On-chip x86 micro-controller (OCM) from Genesis LCD TV/ Monitor Controller.
- On-chip 80C51 micro-controller from Philips Semiconductor UOCIII (Hercules) series.

Each micro-controller has it own I2C bus which host its own internal devices.
The Hercules is integrated with the Video and Audio Processor. For dynamic data storage, such as SMART PICTURE and SMART SOUND settings, an external NVM IC is being used. Another feature includes an optional Teletext/Closed Caption decoder with the possibility of different page storage depending on the Hercules type number.

The Micro Controller ranges in ROM from 128 kB with no TXT-decoder to 128 kB with a 10 page Teletext or with Closed Caption.

9.10.2 Block Diagram

The block diagram of the Micro Controller application is shown below.

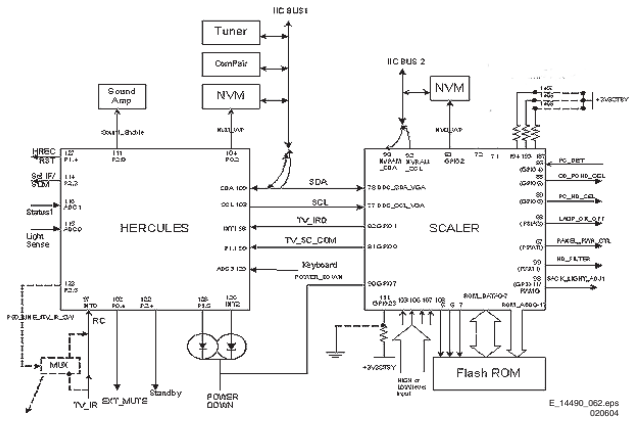


Figure 9-5 Micro Controller block diagram

9.10.3 Basic Specification

The Micro Controller operates at the following supply voltages:
- +3.3 V_dc at pins 4, 88, 94, and 109.
- +1.8 V_dc at pins 93, 96, and 117.
- I2C pull up supply: +3.3V_dc.

9.10.4 Pin Configuration and Functionality

The ports of the Micro Controller can be configured as follows:
- A normal input port.
- An input ADC port.
- An output Open Drain port.
- An output Push-Pull port.
- An output PWM port.
- Input/Output Port

The following table shows the ports used for the L04 control:

Table 9-2 Micro Controller ports overview

Pin	Name	Description	Configuration
97	INT0/ P0.5	IR	INT0
98	P1.0/ INT1	TV_IRQ	INT2
99	P1.1/ T0	TV_SC_COM	P1.1
102	P0.4/ I2SWS	EXT_MUTE	P0.4
103	P0.3/ I2SCLK	Lip Sync	I2SCLK
104	P0.2/ I2SDO2	NVM_WP	P0.2
105	P0.1/ I2SDO1	Lip Sync	I2SDO1
106	P0.0/ I2SDI/O	Lip Sync	I2SDI/O
107	P1.3/ T1	PC-TV_LED	P1.3
108	P1.6/ SCL	SCL	SCL
109	P1.7/ SDA	SDA	SDA
111	P2.0/ TPWM	SOUND_ENABLE	P2.0
112	P2.1/ PWM0	(for future use)	-
113	P2.2/ PWM1	(for future use)	-
114	P2.3/ PWM2	SEL_IF	P2.3
115	P3.0/ ADC0	Light Sensor - SDM	ADC0
116	P3.1/ ADC1	STATUS_1	ADC1
119	P3.2/ ADC2	STATUS_2	ADC2
120	P3.3/ ADC3	KEYBOARD	ADC3
122	P2.4/ PWM3	STANDBY	P2.4
123	P2.5/ PWM4	(for future use)	-
126	P1.2/ INT2	(for future use)	-
127	P1.4/ RX	HERC_RESET	-
128	P1.5/ TX	POWER_DOWN	P1.5

The description of each functional pin is explained below:

- **LED.** This signal is used as an indication for the Standby, Remote and Error Indicator. Region diversity:
  - During protection mode, the LED blinks and the set is in standby mode.
  - During error conditions it blinks at a predefined rate.
  - After receiving a valid RC-5 or local keyboard command it flashes once.
  - For sets with error message indication, the LED blinks when message is active and the set is in standby mode.
- **SCL.** This is the clock wire of the two-wire single master bi-directional I2C bus.
- **SDA.** This is the data wire of the two-wire single master bi-directional I2C bus.
- **STANDBY.** The Hercules generates this signal. This can enable the power supply in normal operation and disable it during Standby. It is of logic “high” (3.3 V) under normal operation and “low” (0 V) during Standby.
- **IR.** This input pin is connected to an RC5 remote control receiver.
- **SEL-IF.** This is an output pin to switch the Video SAW filter between M system and other systems.
  - 0: NTSC M (default)
  - 1: PAL B/G, DK, I, L
- **NVM_WP.** The global protection line is used to enable and disable write protection to the NVM. When write to the NVM is required, pin 7 of the NVM must be pulled to logic ‘0’ first (via Write_Protect of the micro-controller pin) before a write is performed. Otherwise pin 7 of NVM must always be at logic “1”
  - 0: Disabled
  - 1: Enabled (default)
- **SOUND_ENABLE.** This pin is use to MUTE the audio amplifier. It is configured as push pull.
- **STATUS_1.** This signal is used to read the status of the SCART 1 input.
- **STATUS_2.** This signal is used to read the status of the SCART 2 input.
- **HERC_RESET.** This pin is use to switch the +1.8V supply.
- POWER_DOWN. The power supply generates this signal. Logic “high” (3.3 V) under normal operation of the TV and goes “low” (0 V) when the Mains input voltage supply goes below 70 V_ac.
- Keyboard. Following are the Keyboard functions and the step values (8 bit) for it.

Table 9-3 Local keyboard values

Function	Voltage (V_dc)	Step values (8 bit)
NAFTA Standby	0	0 - 6
Ch +	0.43	7 - 33
Exit Factory (Ch- and Vol-)	0.69	34 - 53
Ch -	0.93	54 - 73
Menu (Vol - and Vol +)	1.19	74 - 96
Vol -	1.49	97 - 121
DVD Eject	1.8	122 - 147
Vol +	2.12	148 - 169

- **TV_IRQ.** This signal is the interrupt from the Scaler IC.
- **TV_SC_COM.** This signal is used for the communication with the Scaler IC.
- **EXT_MUTE.** This signal is used to reduce the Switch-off plop.

9.11 LCD Display

9.11.1 Specifications

Panel model : LC171W03-A4K3 (17”)

	:	LC230W01-A2K8 (23")
	:	LC260W01-A5K6 (26")
Resolution (HxV)	:	1080x768 pixels (17")
	:	1280x768 pixels (23")
	:	1280x768 pixels (26")
Luminance	:	450 nit (17")
	:	450 nit (23")
	:	450 nit (26")
Supplier	:	LG.Philips LCD

9.12 Abbreviation list

0/6/12	SCART switch control signal on A/V board. 0 = loop through (AUX to TV), 6 = play 16:9 format, 12 = play 4:3 format
1080i	1080 visible lines, interlaced
1080p	1080 visible lines, progressive scan
2CS	2 Carrier Stereo
480i	480 visible lines, interlaced
480p	480 visible lines, progressive scan
ACI	Automatic Channel Installation: algorithm that installs TV channels directly from a cable network by means of a predefined TXT page
ADC	Analogue to Digital Converter
AFC	Automatic Frequency Control: control signal used to tune to the correct frequency
AGC	Automatic Gain Control: algorithm that controls the video input of the feature box
AM	Amplitude Modulation
AP	Asia Pacific
AR	Aspect Ratio: 4 by 3 or 16 by 9
ASD	Automatic Standard Detection
AV	Audio Video
B-SC1-IN	Blue SCART1 in
B-SC2-IN	Blue SCART2 in
B-TXT	Blue teletext
B/G	Monochrome TV system. Sound carrier distance is 5.5 MHz
BOCMA	Bimos one Chip Mid-end Architecture: video and chroma decoder
C-FRONT	Chrominance front input
CBA	Circuit Board Assembly (or PWB)
CL	Constant Level: audio output to connect with an external amplifier
CLUT	Colour Look Up Table
ComPair	Computer aided rePair
CSM	Customer Service Mode
CVBS	Composite Video Blanking and Synchronisation
CVBS-EXT	CVBS signal from external source (VCR, VCD, etc.)
CVBS-INT	CVBS signal from Tuner
CVBS-MON	CVBS monitor signal
CVBS-TER-OUT	CVBS terrestrial out
DAC	Digital to Analogue Converter
DBE	Dynamic Bass Enhancement: extra low frequency amplification
DFU	Directions For Use: owner's manual
DNR	Dynamic Noise Reduction
DRAM	Dynamic RAM
DSP	Digital Signal Processing
DST	Dealer Service Tool: special (European) remote control designed for service technicians
DTS	Digital Theatre Sound
DVD	Digital Video Disc
EEPROM	Electrically Erasable and Programmable Read Only Memory
EPG	Electronic Program Guide: system used by broadcasters to transmit TV guide information (= NexTView)
EPLD	Electronic Programmable Logic Device
EU	EUrope
EXT	EXTernal (source), entering the set by SCART or by cinches (jacks)
FBL	Fast Blanking: DC signal accompanying RGB signals
FBL-SC1-IN	Fast blanking signal for SCART1 in
FBL-SC2-IN	Fast blanking signal for SCART2 in
FBL-TXT	Fast Blanking Teletext
FLASH	FLASH memory
FM	Field Memory / Frequency Modulation
FMR	FM Radio
FRC	Frame Rate Converter
FRONT-C	Front input chrominance (SVHS)
FRONT-DETECT	Front input detection
FRONT-Y_CVBS	Front input luminance or CVBS (SVHS)
G-SC1-IN	Green SCART1 in
G-SC2-IN	Green SCART2 in
G-TXT	Green teletext
H	H_sync to the module
HA	Horizontal Acquisition: horizontal sync pulse coming out of the BOCMA
HD	High Definition
HP	HeadPhone
I	Monochrome TV system. Sound carrier distance is 6.0 MHz
I2C	Integrated IC bus
I2S	Integrated IC Sound bus
IC	Integrated Circuit
IF	Intermediate Frequency
Interlaced	Scan mode where two fields are used to form one frame. Each field contains half the number of the total amount of lines. The fields are written in "pairs", causing line flicker.
IR	Infra Red
IRQ	Interrupt ReQuest
Last Status	The settings last chosen by the customer and read and stored in RAM or in the NVM. They are called at start-up of the set to configure it according the customers wishes
LATAM	LATin AMerica
LC04	Philips chassis name for LCD TV 2004 project
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LINE-DRIVE	Line drive signal
L/L'	Monochrome TV system. Sound carrier distance is 6.5 MHz. L' is Band I, L is all bands except for Band I
LS	LoudSpeaker
LVDS	Low Voltage Differential Signalling, data transmission system for high speed and low EMI communication.
M/N	Monochrome TV system. Sound carrier distance is 4.5 MHz
MOSFET	Metal Oxide Semiconductor Field Effect Transistor
MPEG	Motion Pictures Experts Group
MSP	Multi-standard Sound Processor: ITT sound decoder
MUTE	MUTE Line
NC	Not Connected
NICAM	Near Instantaneous Compounded Audio Multiplexing. This is a digital sound system, used mainly in Europe.
NTSC	National Television Standard Committee. Colour system used mainly in North America and Japan.

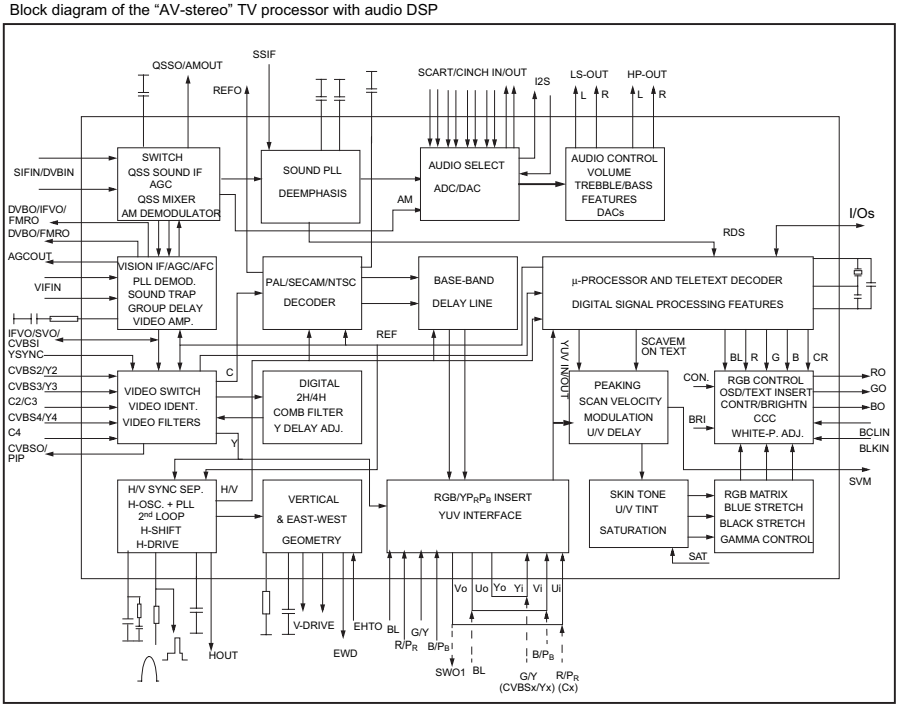
	Colour carrier NTSC M/N = 3.579545 MHz, NTSC 4.43 = 4.433619 MHz (this is a VCR norm, it is not transmitted off-air)
NVM	Non Volatile Memory: IC containing TV related data (for example, options)
O/C	Open Circuit
ON/OFF LED	On/Off control signal for the LED
OSD	On Screen Display
P50	Project 50 communication: protocol between TV and peripherals
PAL	Phase Alternating Line. Colour system used mainly in Western Europe (colour carrier = 4.433619 MHz) and South America (colour carrier PAL M = 3.575612 MHz and PAL N = 3.582056 MHz)
PC	Personal Computer
PCB	Printed Circuit Board (or PWB)
PIG	Picture In Graphic
PIP	Picture In Picture
PLL	Phase Locked Loop. Used, for example, in FST tuning systems. The customer can directly provide the desired frequency
Progressive Scan	Scan mode where all scan lines are displayed in one frame at the same time, creating a double vertical resolution.
PWB	Printed Wiring Board (or PCB)
RAM	Random Access Memory
RC	Remote Control transmitter
RC5	Remote Control system 5, the signal from the remote control receiver
RGB	Red, Green, and Blue. The primary colour signals for TV. By mixing levels of R, G, and B, all colours (Y/C) are reproduced.
RGBHV	Red, Green, Blue, Horizontal sync, and Vertical sync
ROM	Read Only Memory
SAM	Service Alignment Mode
SIF	Sound Intermediate Frequency
SC	SandCastle: two-level pulse derived from sync signals
SC1-OUT	SCART output of the MSP audio IC
SC2-B-IN	SCART2 Blue in
SC2-C-IN	SCART2 chrominance in
SC2-OUT	SCART output of the MSP audio IC
S/C	Short Circuit
SCART	Syndicat des Constructeurs d'Appareils Radiorecepteurs et Televisieurs
SCL	CLock Signal on I2C bus
SD	Standard Definition
SDA	DAta Signal on I2C bus
SDRAM	Synchronous DRAM
SECAM	SEequence Couleur Avec Memoire. Colour system used mainly in France and Eastern Europe. Colour carriers = 4.406250 MHz and 4.250000 MHz
SIF	Sound Intermediate Frequency
SMPS	Switch Mode Power Supply
SND	SouND
SNDL-SC1-IN	Sound left SCART1 in
SNDL-SC1-OUT	Sound left SCART1 out
SNDL-SC2-IN	Sound left SCART2 in
SNDL-SC2-OUT	Sound left SCART2 out
SNDR-SC1-IN	Sound right SCART1 in
SNDR-SC1-OUT	Sound right SCART1 out
SNDR-SC2-IN	Sound right SCART2 out
SNDR-SC2-OUT	Sound right SCART2 out
SNDS-VL-OUT	Surround sound left variable level out
SNDS-VR-OUT	Surround sound right variable level out
SOPS	Self Oscillating Power Supply
S/PDIF	Sony Philips Digital InterFace
SRAM	Static RAM
STBY	STandBY
SVHS	Super Video Home System
SW	SubWoofer / SoftWare
THD	Total Harmonic Distortion
TXT	TeleteXT
uP	Microprocessor
VA	Vertical Acquisition
VL	Variable Level out: processed audio output toward external amplifier
VCR	Video Cassette Recorder
VGA	Video Graphics Array
WD	Watch Dog
WYSIWYR	What You See Is What You Record: record selection that follows main picture and sound
XTAL	Quartz crystal
YPbPr	Component video (Y= Luminance, Pb/Pr= Colour difference signals)
Y/C	Luminance (Y) and Chrominance (C) signal
Y-OUT	Luminance-signal
YUV	Component video

9.13 IC Data Sheets

This section shows the internal block diagrams and pin layouts of ICs that are drawn as "black boxes" in the electrical diagrams (with the exception of "memory" and "logic" ICs).

9.13.1 Diagram A2, Type TDA12029H (IC7011)

Block diagram of the “AV-stereo” TV processor with audio DSP



Pin configuration “stereo” and “AV-stereo” versions with Audio DSP

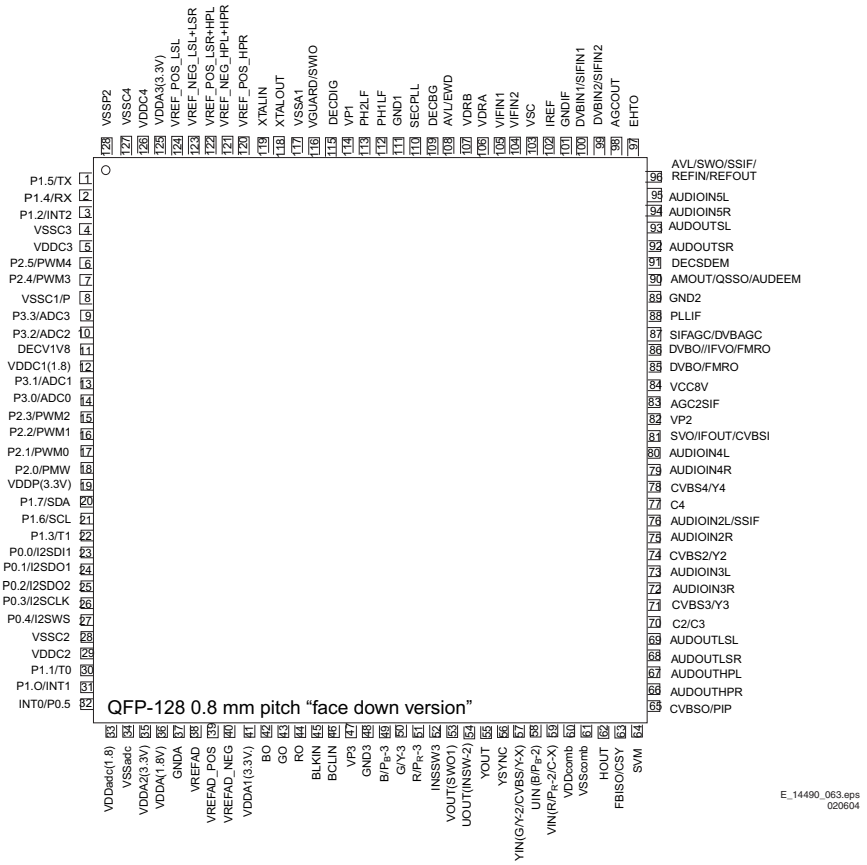
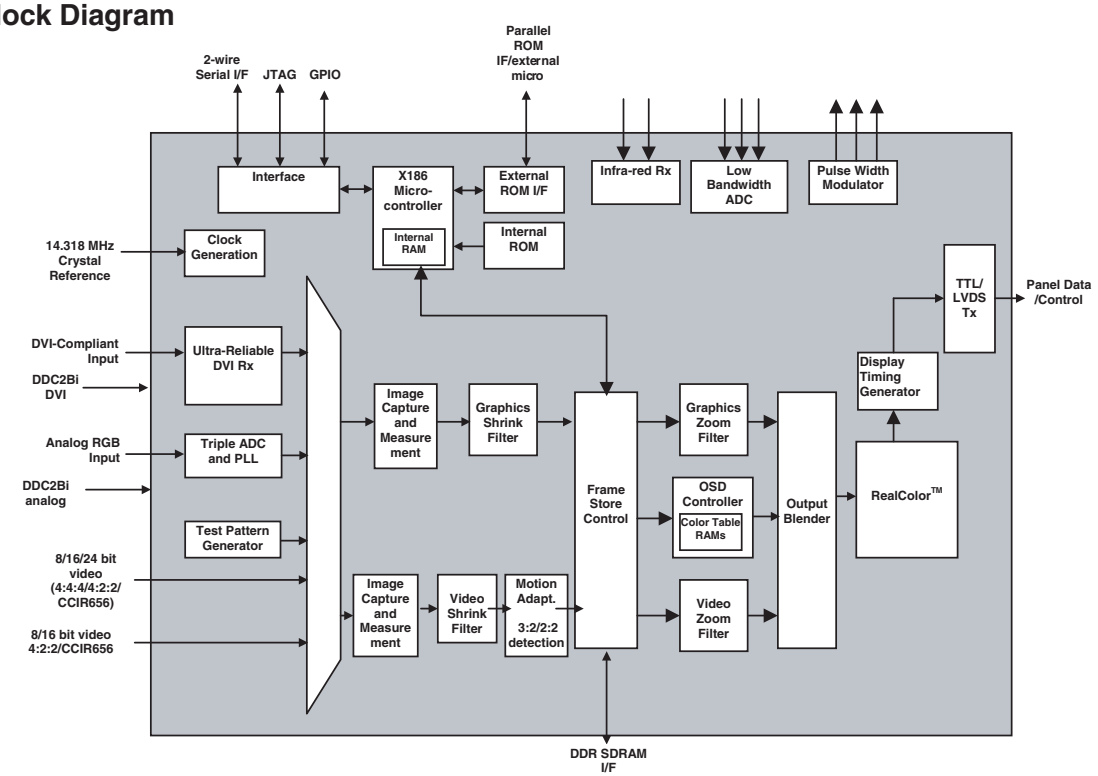


Figure 9-6 Internal Block Diagram and Pin Configuration

9.13.2 Diagram A7, Type GM1501 (IC7401)

Block Diagram



Pin Configuration

	1	2	3	4	5	6	7	8	9	10	11	12	13
A	NC	ADC_3.3	ADC_1.8	ADC_1.8	ADC_DGND	RXC+	DVI_GND	RX0+	RX1+	RX2+	DVI_GND	LBADC_IN3	D_GND
B	BLUE-	BLUE+	ADC_3.3	ADC_DGND	DVI_GND	RXC-	DVI_GND	RX0-	RX1-	RX2-	REXT	LBADC_IN2	D_GND
C	GREEN-	GREEN+	SOG	ADC_AGND	NC	DVI_3.3	DVI_GND	DVI_3.3	DVI_3.3	DVI_3.3	DVI_3.3	LBADC_IN1	LBADC_33
D	RED-	RED+	ADC_3.3	ADC_AGND	NC	DVI_1.8	DVI_GND	DVI_1.8	DVI_1.8	DVI_1.8	DVI_GND	LBADC_ RETURN	LBADC_GND
E	ADC_AGND	ADC_AGND	ADC_3.3	ADC_AGND									
F	NC	VDDD33_ PLL	VSSA33_ RPLL	VDDA33_ RPLL									
G	VDDA33_ FPLL	VSSD33_ PLL	TCLK	XTAL									
H	VDDD33_ SDDS	VSSA33_ SDDS	VDDA33_ SDDS	VSSA33_ FPLL									
J	VDDD33_ DDDS	VSSA33_ DDDS	VDDA33_ DDDS	VSSD33_ SDDS									
K	RESETn	ACS_ RSET_HD	NC	VSSD33_ DDDS						CORE_1.8	CORE_1.8	D_GND	D_GND
L	OCM_INT2	OCM_INT1	AVSYNC	AHSYNC						D_GND	CORE_1.8	D_GND	D_GND
M	OCM_UDO	OCM_UDI	IR0	IR1						D_GND	D_GND	D_GND	D_GND
N	VGA_SDA	VGA_SCL	DVI_SDA	DVI_SCL						D_GND	D_GND	D_GND	D_GND
P	OCM_CS1n	OCM_CS2n	MSTR_SDA	MSTR_SCL						D_GND	D_GND	D_GND	D_GND
R	ROM_CSn	OCM_REn	OCM_WEn	EXTCLK						D_GND	D_GND	D_GND	D_GND
T	OCMADDR 17	OCMADDR 18	OCMADDR 19	OCM_CS0n						D_GND	CORE_1.8	D_GND	D_GND
U	OCMADDR 13	OCMADDR 14	OCMADDR 15	OCMADDR 16						CORE_1.8	CORE_1.8	D_GND	D_GND
V	OCMADDR 9	OCMADDR 10	OCMADDR 11	OCMADDR 12									
W	OCMADDR 6	OCMADDR 7	OCMADDR 8	IO_3.3									
Y	OCMADDR 3	OCMADDR 4	OCMADDR 5	IO_3.3									
AA	OCMADDR 0	OCMADDR 1	OCMADDR 2	IO_3.3									
AB	OCMDATA13	OCMDATA14	OCMDATA15	IO_3.3									
AC	OCMDATA10	OCMDATA11	OCMDATA12	IO_3.3	GPIO_G09_ B2 (DEGRN0)	IO_3.3	DCLK	IO_3.3	GPIO_G07_ B2 (DERED4)	IO_3.3	SHIELD[1] (DEGRN3)	LVDSB_3.3	LVDSB_GND
AD	OCMDATA9	OCMDATA6	OCMDATA3	OCMDATA0	GPIO_G09_ B3 (DEGRN1)	GPIO_G08_ B0 (DORED0)	DEN	GPIO_G08_ B5 (DOBLU1)	GPIO_G07_ B3 (DERED5)	GPIO_G07_ B6 (DERED8)	SHIELD[2] (DEGRN4)	LVDSB_3.3	LVDSB_3.3
AE	OCMDATA8	OCMDATA5	OCMDATA2	GPIO_G09_ B0 (DERED0)	GPIO_G09_ B4 (DEBLU0)	GPIO_G08_ B1 (DORED1)	GPIO_G08_ B3 (DOGRN1)	GPIO_G07_ B0 (DERED2)	GPIO_G07_ B4 (DERED6)	GPIO_G07_ B7 (DERED9)	SHIELD[3] (DEGRN5)	BC+ (DEGRN8)	SHIELD[4] (DEBLU2)
AF	OCMDATA7	OCMDATA4	OCMDATA1	GPIO_G09_ B1 (DERED1)	GPIO_G09_ B5 (DEBLU1)	GPIO_G08_ B2 (DOGRN0)	GPIO_G08_ B4 (DOBLU0)	GPIO_G07_ B1 (DERED3)	GPIO_G07_ B5 (DERED7)	SHIELD[0] (DEGRN2)	B3+ (DEGRN6)	B3- (DEGRN7)	BC- (DEGRN9)

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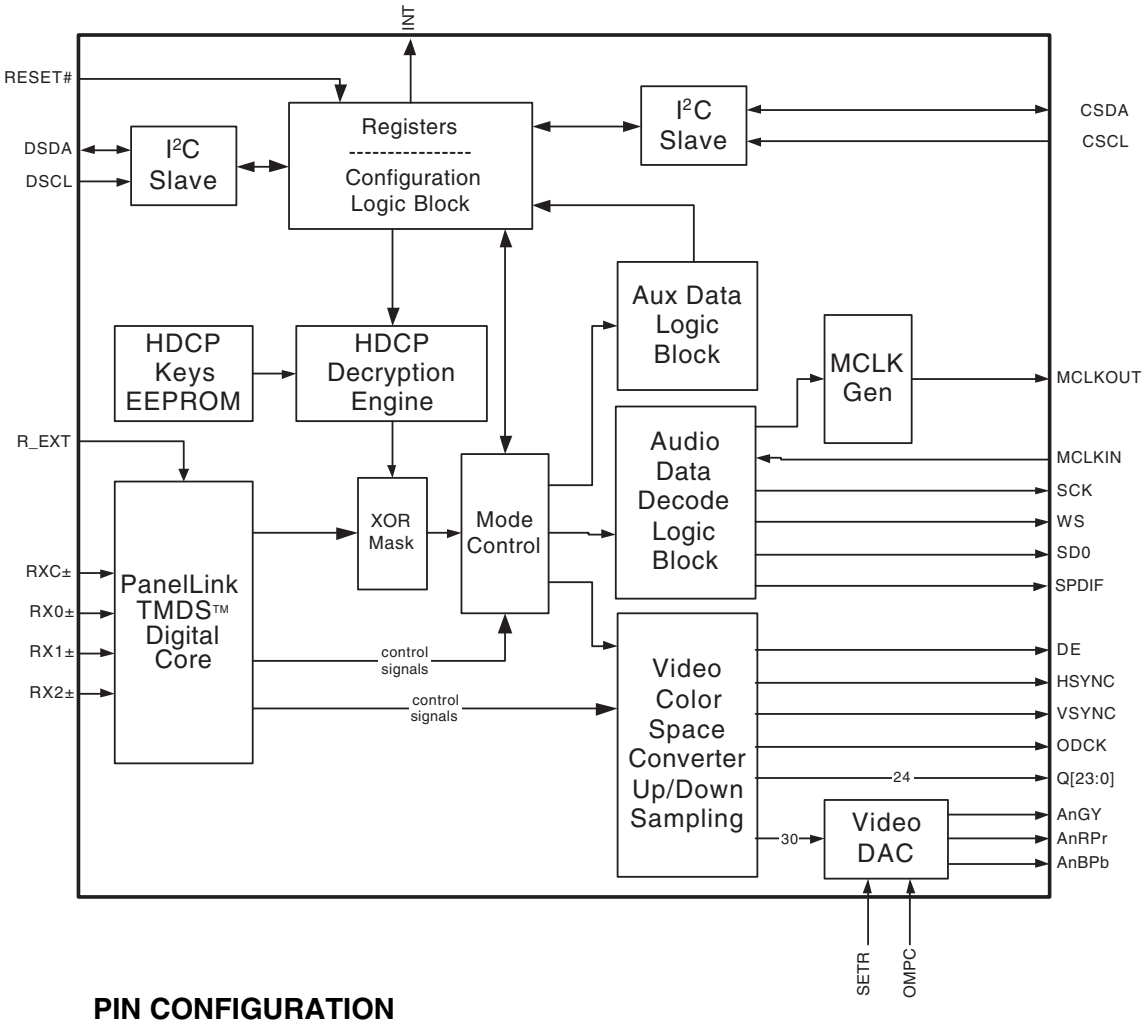
Figure 9-7 Internal Block Diagram and Pin Configuration

9.13.3 Diagram A12, Type S9993CT (IC7808)

BLOCK DIAGRAM



PIN CONFIGURATION

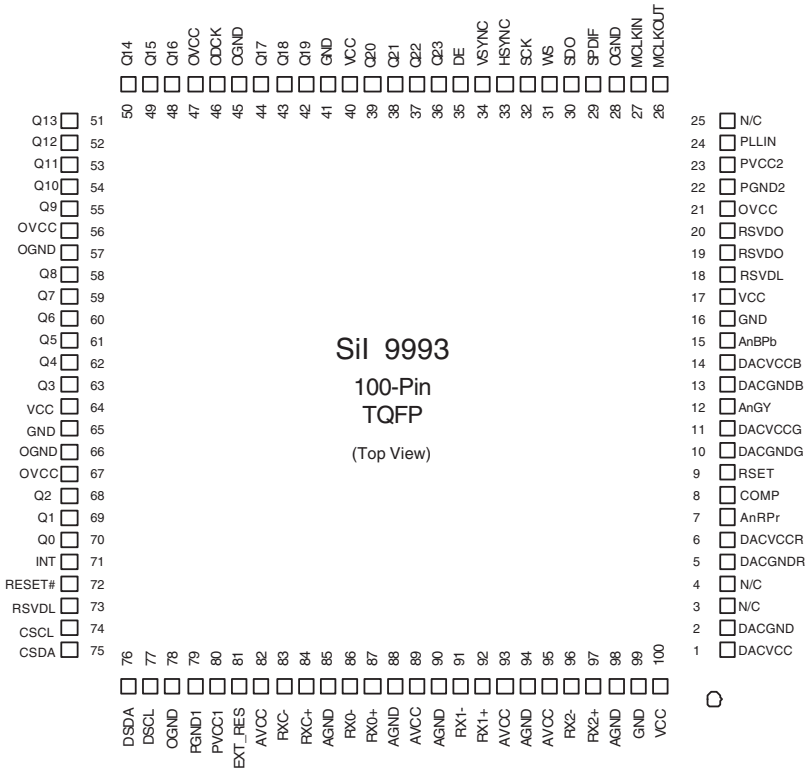


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Figure 9-8 Internal Block Diagram

10. Spare Parts List

Set Level

Various

1099▲	9322 194 30682	TFT-LCD LC230W01
8301	3139 131 03961	FFC Foil 20P
8403▲	3139 131 03581	Cable 20P
8990	3139 131 03861	Cable 12P

TV Scalerboard [A]

Various

1001	2422 543 01255	Crystal 24.576MHz
1005	2422 025 18249	45P Female
1302▲	3139 147 19701	UR1316/A I H-3
1303	2422 025 16835	3P Male
1304	2422 025 16835	3P Male
1328	2422 549 44372	Filter K3953L
1330	2422 549 44369	Filter K9656L
1401	2422 543 01133	Crystal 14.32MHz
1704	2422 025 16543	4P Male
1910	2422 025 16705	12P Male
8910	3139 110 28271	Cable 12P

⊣⊢

2000	3198 017 41050	1µF 10V 0603
2001	2020 552 96718	220nF 10% 6.3V 0402
2002	2020 021 91679	100µF 20% 6.3V
2004	2020 552 96718	220nF 10% 6.3V 0402
2005	3198 035 71040	100nF 10% 16V 0402
2006	3198 034 08280	8.2pF 50V 0402
2007	3198 034 08280	8.2pF 50V 0402
2008	3198 017 44740	470nF 10V 0603
2009	3198 017 41050	1µF 10V 0603
2010	3198 035 26820	6.8nF 10% 16V 0402
2011	2020 552 96718	220nF 10% 6.3V 0402
2012	2020 021 91557	100µF 20% 16V
2013	3198 035 71040	100nF 10% 16V 0402
2014	3198 035 71040	100nF 10% 16V 0402
2015	3198 035 71040	100nF 10% 16V 0402
2016	3198 035 71040	100nF 10% 16V 0402
2017	3198 035 71040	100nF 10% 16V 0402
2018	3198 035 71040	100nF 10% 16V 0402
2019	2020 021 91617	47µF 20% 16V
2020	2238 869 15101	100pF 5% 50V 0402
2021	2020 552 96628	10nF 10% 16V 0402
2022	3198 035 02210	220pF 5% 50V 0402
2023	2020 552 96718	220nF 10% 6.3V 0402
2024	2020 021 91557	100µF 20% 16V
2025	3198 035 71040	100nF 10% 16V 0402
2026	3198 035 71040	100nF 10% 16V 0402
2027	3198 035 71040	100nF 10% 16V 0402
2028	2020 552 96628	10nF 10% 16V 0402
2029	3198 035 71040	100nF 10% 16V 0402
2030	3198 035 71040	100nF 10% 16V 0402
2031	3198 035 71040	100nF 10% 16V 0402
2032	3198 035 71040	100nF 10% 16V 0402
2033	2020 552 96718	220nF 10% 6.3V 0402
2034	2020 552 00002	3.3nF 2% 50V 0805
2035	4822 124 12095	100µF 20% 16V
2040	2020 021 91616	10µF
2041	2020 552 96718	220nF 10% 6.3V 0402
2042	2020 552 00002	3.3nF 2% 50V 0805
2043	3198 035 71040	100nF 10% 16V 0402
2044	2020 552 96718	220nF 10% 6.3V 0402
2045	2020 552 96628	10nF 10% 16V 0402
2046	3198 017 41050	1µF 10V 0603
2048	2020 552 96834	1µF 20% 6.3V 0402
2052	2020 552 96618	1nF 10% 50V 0402
2053	2020 552 96618	1nF 10% 50V 0402
2054	2020 552 96618	1nF 10% 50V 0402
2055	4822 126 14519	22pF 5% 50V 0402
2060	3198 035 71040	100nF 10% 16V 0402
2061	2020 021 91616	10µF 16V
2062	2020 552 00002	3.3nF 2% 50V 0805
2063	3198 017 31540	150nF 10V 0603
2068	2020 552 96718	220nF 10% 6.3V 0402
2071	2020 021 91557	100µF 20% 16V
2072	2020 552 96718	220nF 10% 6.3V 0402
2073	2020 552 96618	1nF 10% 50V 0402
2074	2020 552 96718	220nF 10% 6.3V 0402
2076	2020 552 96718	220nF 10% 6.3V 0402
2077	2020 552 96834	1µF 20% 6.3V 0402
2078	2238 869 15101	100pF 5% 50V 0402
2079	2020 552 96632	22nF 10% 16V 0402
2082	2020 552 96618	1nF 10% 50V 0402
2083	2020 552 96618	1nF 10% 50V 0402
2084	2020 552 96618	1nF 10% 50V 0402
2085	2020 552 96618	1nF 10% 50V 0402
2086	2020 552 96618	1nF 10% 50V 0402
2087	2020 552 96618	1nF 10% 50V 0402
2089	2020 552 96618	1nF 10% 50V 0402
2099	2020 552 96618	1nF 10% 50V 0402
2302	4822 122 33761	22pF 5% 50V
2303	4822 122 33761	22pF 5% 50V
2307	3198 024 44730	47nF 50V 0603
2308	3198 030 82280	2.2µF 20% 50V
2309	2020 021 91871	470µF 16V
2311	2020 021 91557	100µF 20% 16V
2313	3198 016 31020	1nF 25V 0603
2314	2238 586 59812	100nF 20% 50V 0603
2317	3198 016 31020	1nF 25V 0603
2318	3198 016 31020	1nF 25V 0603
2321	5322 126 11583	10nF 10% 50V 0603
2324	5322 126 11583	10nF 10% 50V 0603
2355	2020 021 91601	470µF 50V
2356	2020 021 91601	470µF 50V
2357	3198 035 71040	100nF 10% 16V 0402
2358	3198 035 03320	3.3nF 5% 50V 0402
2359	2020 552 96628	10nF 10% 16V 0402
2370	2020 552 96834	1µF 20% 6.3V 0402
2371	2020 552 96834	1µF 20% 6.3V 0402
2372	2020 552 96618	1nF 10% 50V 0402
2373	2020 552 96618	1nF 10% 50V 0402
2374	3198 035 71040	100nF 10% 16V 0402
2375	2020 021 91616	10µF 16V
2376	3198 017 41050	1µF 10V 0603
2377	3198 017 41050	1µF 10V 0603
2378	2020 552 96718	220nF 10% 6.3V 0402
2379	2020 552 96718	220nF 10% 6.3V 0402
2380	2020 021 91617	47µF 20% 16V
2381	3198 035 71040	100nF 10% 16V 0402
2382	2020 021 91871	470µF 16V
2386	3198 017 41050	1µF 10V 0603
2387	4822 126 14324	33pF 5% 50V 0402
2388	4822 126 14324	33pF 5% 50V 0402
2389	2020 012 93761	330µF 6.3V
2392	3198 017 41050	1µF 10V 0603
2394	3198 035 71040	100nF 10% 16V 0402
2395	3198 035 71040	100nF 10% 16V 0402
2396	4822 124 23002	10µF 16V
2397	2020 552 96834	1µF 20% 6.3V 0402
2398	2020 552 96834	1µF 20% 6.3V 0402
2401	4822 124 80151	47µF 16V
2402	4822 124 80151	47µF 16V
2403	3198 035 71040	100nF 10% 16V 0402
2404	3198 035 71040	100nF 10% 16V 0402
2405	3198 035 71040	100nF 10% 16V 0402
2406	3198 035 71040	100nF 10% 16V 0402
2407	3198 035 71040	100nF 10% 16V 0402
2408	3198 035 71040	100nF 10% 16V 0402
2409	3198 035 71040	100nF 10% 16V 0402
2410	3198 035 71040	100nF 10% 16V 0402
2411	3198 035 71040	100nF 10% 16V 0402
2412	3198 035 71040	100nF 10% 16V 0402
2413	3198 035 71040	100nF 10% 16V 0402
2414	3198 035 71040	100nF 10% 16V 0402
2415	3198 035 71040	100nF 10% 16V 0402
2416	3198 035 71040	100nF 10% 16V 0402
2417	4822 124 80151	47µF 16V
2418	4822 124 80151	47µF 16V
2419	3198 035 71040	100nF 10% 16V 0402
2420	3198 035 71040	100nF 10% 16V 0402
2421	3198 035 71040	100nF 10% 16V 0402
2422	3198 035 71040	100nF 10% 16V 0402
2423	3198 035 71040	100nF 10% 16V 0402
2424	3198 035 71040	100nF 10% 16V 0402
2425	3198 035 71040	100nF 10% 16V 0402
2426	3198 035 71040	100nF 10% 16V 0402
2427	3198 035 71040	100nF 10% 16V 0402
2428	3198 035 71040	100nF 10% 16V 0402
2429	3198 035 71040	100nF 10% 16V 0402
2430	3198 035 71040	100nF 10% 16V 0402
2431	3198 035 71040	100nF 10% 16V 0402
2432	3198 035 71040	100nF 10% 16V 0402
2433	3198 035 71040	100nF 10% 16V 0402
2434	4822 124 80151	47µF 16V
2435	4822 124 80151	47µF 16V
2436	3198 035 71040	100nF 10% 16V 0402
2437	3198 035 71040	100nF 10% 16V 0402
2438	3198 035 71040	100nF 10% 16V 0402
2439	3198 035 71040	100nF 10% 16V 0402
2440	3198 035 71040	100nF 10% 16V 0402
2441	3198 035 71040	100nF 10% 16V 0402
2442	3198 035 71040	100nF 10% 16V 0402
2443	3198 035 71040	100nF 10% 16V 0402
2444	3198 035 71040	100nF 10% 16V 0402
2445	3198 035 71040	100nF 10% 16V 0402
2446	3198 035 71040	100nF 10% 16V 0402
2447	3198 035 71040	100nF 10% 16V 0402
2448	3198 035 71040	100nF 10% 16V 0402
2449	3198 035 71040	100nF 10% 16V 0402
2450	3198 035 71040	100nF 10% 16V 0402
2451	4822 124 80151	47µF 16V
2452	3198 035 71040	100nF 10% 16V 0402
2453	3198 035 71040	100nF 10% 16V 0402
2454	3198 035 71040	100nF 10% 16V 0402
2455	3198 035 71040	100nF 10% 16V 0402
2456	3198 035 71040	100nF 10% 16V 0402
2457	2020 552 96675	10µF 10% 16V 1210
2461	3198 035 71040	100nF 10% 16V 0402
2462	3198 035 71040	100nF 10% 16V 0402
2463	3198 035 71040	100nF 10% 16V 0402
2464	3198 035 71040	100nF 10% 16V 0402
2465	5322 124 41945	22µF 20% 35V
2466	3198 035 71040	100nF 10% 16V 0402
2467	3198 035 71040	100nF 10% 16V 0402
2468	3198 035 71040	100nF 10% 16V 0402
2469	3198 035 71040	100nF 10% 16V 0402
2470	5322 124 41945	22µF 20% 35V
2471	3198 035 71040	100nF 10% 16V 0402
2472	3198 035 71040	100nF 10% 16V 0402
2473	3198 035 71040	100nF 10% 16V 0402
2474	3198 035 71040	100nF 10% 16V 0402
2475	3198 035 71040	100nF 10% 16V 0402
2476	3198 035 71040	100nF 10% 16V 0402
2477	3198 035 71040	100nF 10% 16V 0402
2478	5322 124 41945	22µF 20% 35V
2479	3198 035 71040	100nF 10% 16V 0402
2480	3198 035 71040	100nF 10% 16V 0402
2481	3198 035 71040	100nF 10% 16V 0402
2482	5322 124 41945	22µF 20% 35V
2483	3198 035 71040	100nF 10% 16V 0402
2484	3198 035 71040	100nF 10% 16V 0402
2485	3198 035 71040	100nF 10% 16V 0402
2486	3198 035 71040	100nF 10% 16V 0402
2487	4822 126 14519	22pF 5% 50V 0402
2488	4822 126 14519	22pF 5% 50V 0402
2490	2238 586 59812	100nF 20% 50V 0603
2491	2238 586 59812	100nF 20% 50V 0603
2492	2238 586 59812	100nF 20% 50V 0603
2495	4822 124 80151	47µF 16V
2496	3198 035 71040	100nF 10% 16V 0402
2501	4822 124 80151	47µF 16V
2502	4822 124 11131	47µF 6.3V
2503	3198 035 71040	100nF 10% 16V 0402
2504	3198 035 71040	100nF 10% 16V 0402
2505	3198 035 71040	100nF 10% 16V 0402
2506	3198 035 71040	100nF 10% 16V 0402
2507	3198 035 71040	100nF 10% 16V 0402
2508	3198 035 71040	100nF 10% 16V 0402
2509	3198 035 71040	100nF 10% 16V 0402
2510	3198 035 71040	100nF 10% 16V 0402
2511	3198 035 71040	100nF 10% 16V 0402
2512	3198 035 71040	100nF 10% 16V 0402
2513	3198 035 71040	100nF 10% 16V 0402
2514	3198 035 71040	100nF 10% 16V 0402
2515	3198 035 71040	100nF 10% 16V 0402
2516	3198 035 71040	100nF 10% 16V 0402
2517	3198 035 71040	100nF 10% 16V 0402
2530	4822 124 23002	10µF 16V
2531	3198 035 71040	100nF 10% 16V 0402
2532	3198 035 71040	100nF 10% 16V 0402
2533	3198 035 71040	100nF 10% 16V 0402
2560	3198 035 71040	100nF 10% 16V 0402
2561	4822 124 12095	100µF 20% 16V
2562	3198 035 71040	100nF 10% 16V 0402
2563	3198 035 14720	4.7nF 5% 25V 0402
2564	2020 552 96656	10µF 20% 25V 1210
2601	3198 035 71040	100nF 10% 16V 0402
2605	3198 035 71040	100nF 10% 16V 0402
2606	3198 035 71040	100nF 10% 16V 0402
2607	3198 035 71040	100nF 10% 16V 0402
2608	3198 035 71040	100nF 10% 16V 0402
2609	3198 035 71040	100nF 10% 16V 0402
2610	3198 035 71040	100nF 10% 16V 0402
2611	4822 124 11131	47µF 6.3V
2612	2020 552 96628	10nF 10% 16V 0402
2613	2020 552 96628	10nF 10% 16V 0402
2614	2020 552 96628	10nF 10% 16V 0402
2615	2020 552 96628	10nF 10% 16V 0402
2616	2020 552 96628	10nF 10% 16V 0402

2617	2020 552 96628	10nF 10% 16V 0402
2618	2020 552 96628	10nF 10% 16V 0402
2619	4822 126 14324	33pF 5% 50V 0402
2620	2238 586 59812	100nF 20% 50V 0603
2621	2020 552 96834	1µF 20% 6.3V 0402
2622	2020 552 96834	1µF 20% 6.3V 0402
2623	2020 552 96834	1µF 20% 6.3V 0402
2624	3198 017 44740	470nF 10V 0603
2625	3198 017 44740	470nF 10V 0603
2626	3198 017 44740	470nF 10V 0603
2630	2020 552 96834	1µF 20% 6.3V 0402
2631	2020 552 96834	1µF 20% 6.3V 0402
2632	2020 552 96834	1µF 20% 6.3V 0402
2633	2020 552 96834	1µF 20% 6.3V 0402
2634	2020 552 96834	1µF 20% 6.3V 0402
2635	2020 552 96834	1µF 20% 6.3V 0402
2636	3198 035 71040	100nF 10% 16V 0402
2638	3198 035 03310	330pF 5% 50V 0402
2639	3198 035 03310	330pF 5% 50V 0402
2702	2020 552 96834	1µF 20% 6.3V 0402
2703	2020 021 91616	10µF 16V
2707	2020 021 91871	470µF 16V
2708	2020 552 96834	1µF 20% 6.3V 0402
2710	3198 035 04710	470pF 50V 0402
2711	3198 035 04710	470pF 50V 0402
2712	2020 552 96834	1µF 20% 6.3V 0402
2713	2238 586 59812	100nF 20% 50V 0603
2714	2020 021 91871	470µF 16V
2715	2020 021 91871	470µF 16V
2718	2020 552 96834	1µF 20% 6.3V 0402
2719	2238 586 59812	100nF 20% 50V 0603
2735	2020 552 96618	1nF 10% 50V 0402
2736	2020 552 96618	1nF 10% 50V 0402
2737	2020 552 96618	1nF 10% 50V 0402
2738	2020 552 96618	1nF 10% 50V 0402
2739	3198 035 04710	470pF 50V 0402
2740	3198 035 04710	470pF 50V 0402
2741	3198 035 04710	470pF 50V 0402
2742	3198 035 04710	470pF 50V 0402
2743	2020 552 96834	1µF 20% 6.3V 0402
2744	2020 552 96834	1µF 20% 6.3V 0402
2745	2020 021 91557	100µF 20% 16V
2746	3198 017 41050	1µF 10V 0603
2847	3198 017 41050	1µF 10V 0603
2848	3198 017 41050	1µF 10V 0603
2860	2238 869 15189	18pF 5% 50V 0402
2861	2238 869 15189	18pF 5% 50V 0402
2862	2238 869 15189	18pF 5% 50V 0402
2863	2238 869 15189	18pF 5% 50V 0402
2864	2238 869 15189	18pF 5% 50V 0402
2865	2238 869 15189	18pF 5% 50V 0402
2866	2238 869 15189	18pF 5% 50V 0402
2867	2238 869 15189	18pF 5% 50V 0402
2868	2238 869 15189	18pF 5% 50V 0402
2869	2238 869 15189	18pF 5% 50V 0402
2909	2020 021 90913	330µF 10V 10V
2910	3198 035 04710	470pF 50V 0402
2911	3198 030 72290	22µF 20% 35V
2920	4822 124 80151	47µF 16V
2921	4822 124 80151	47µF 16V
2930	2020 021 91871	470µF 16V
2931	3198 035 04710	470pF 50V 0402
2933	2020 021 91871	470µF 16V
2934	2020 552 96793	4.7nF 10% 50V 0402
2935	2020 021 91871	470µF 16V
2937	2020 552 96618	1nF 10% 50V 0402
2938	2020 552 96618	1nF 10% 50V 0402
2939	2020 552 96618	1nF 10% 50V 0402
2940	2020 552 96618	1nF 10% 50V 0402
2941	2020 552 96618	1nF 10% 50V 0402
2942	2020 552 96618	1nF 10% 50V 0402
2953	2020 021 91871	470µF 16V
2955	3198 035 14720	4.7nF 5% 25V 0402
2956	3198 035 02210	220pF 5% 50V 0402
2957	2020 021 91871	470µF 16V
2958	2020 021 91871	470µF 16V
2959	3198 035 71040	100nF 10% 16V 0402
2960	4822 124 80151	47µF 16V
2961	3198 035 71030	10nF 16V 0402
2962	3198 035 71040	100nF 10% 16V 0402
2964	2020 552 96618	1nF 10% 50V 0402
2965	2020 552 96618	1nF 10% 50V 0402
2966	2020 552 96618	1nF 10% 50V 0402
2968	2020 552 96618	1nF 10% 50V 0402
2969	2020 552 96618	1nF 10% 50V 0402
2970	2020 552 96618	1nF 10% 50V 0402
2992	3198 035 71040	100nF 10% 16V 0402
2993	2020 552 96618	1nF 10% 50V 0402
2994	2020 021 91871	470µF 16V
2995	3198 035 71040	100nF 10% 16V 0402
2996	4822 124 80151	47µF 16V

–WW–

3000	3198 031 04720	4.7kΩ 5% 0402
3001	2322 702 70398	22kΩ 0603
3002	4822 117 13601	22kΩ 5% 0402
3003	2322 702 70398	3.9Ω
3004	4822 117 13601	22kΩ 5% 0402
3005	3198 031 08210	820Ω 5% 0,5W
3006	4822 117 13545	100Ω 1% 0402
3007	3198 031 04720	4.7kΩ 5% 0402
3008	3198 031 04730	47Ω 5% 0402
3009	4822 117 11297	100kΩ 5% 0.1W
3010	4822 117 13548	1kΩ 5% 0402
3012	3198 031 04730	47Ω 5% 0402
3013	4822 117 13545	100Ω 1% 0402
3014	4822 117 13543	470Ω 5% 0402
3015	4822 117 13605	Jumper 0402
3016	4822 117 13545	100Ω 1% 0402
3017	4822 117 13605	Jumper 0402
3019	4822 117 13545	100Ω 1% 0402
3020	4822 117 13548	1kΩ 5% 0402
3021	2322 706 72702	2.7kΩ 1% 0402
3022	4822 117 13606	10kΩ 5% 0.01W 0402
3023	4822 117 13602	2.2kΩ 5% 0.01W 0402
3024	3198 031 04720	4.7kΩ 5% 0402
3025	2322 706 75603	56kΩ 1% 0402
3026	4822 117 13606	10kΩ 5% 0.01W 0402
3027	3198 031 04720	4.7kΩ 5% 0402
3028	4822 117 11297	100kΩ 5% 0.1W
3029	4822 117 13548	1kΩ 5% 0402
3030	4822 117 11297	100kΩ 5% 0.1W
3031	3198 031 04730	47Ω 5% 0402
3032	3198 031 02240	220kΩ 5% 0.1W 0402
3033	3198 031 04730	47Ω 5% 0402
3035	4822 117 13545	100Ω 1% 0402
3048	4822 117 13606	10kΩ 5% 0.01W 0402
3049	4822 117 13545	100Ω 1% 0402
3050	4822 117 13545	100Ω 1% 0402
3051	4822 117 13545	100Ω 1% 0402
3052	4822 117 13605	Jumper 0402
3054	4822 117 13606	10kΩ 5% 0.01W 0402
3057	2322 706 78201	820Ω 0402
3058	4822 117 13543	470Ω 5% 0402
3059	4822 117 13548	1kΩ 5% 0402
3060	3198 031 03930	39kΩ 5% 0402
3061	3198 031 01820	1.8kΩ 5% 0.01W 0402
3062	4822 117 13605	Jumper 0402
3063	4822 117 13548	1kΩ 5% 0402
3064	4822 117 13545	100Ω 1% 0402
3065	3198 031 04720	4.7kΩ 5% 0402
3066	3198 031 04720	4.7kΩ 5% 0402
3067	4822 117 13545	100Ω 1% 0402
3068	4822 117 13548	1kΩ 5% 0402
3069	4822 117 13548	1kΩ 5% 0402
3070	4822 117 13545	100Ω 1% 0402
3071	4822 117 13545	100Ω 1% 0402
3073	3198 031 01530	15kΩ 5% 0.01W 0402
3074	4822 117 11297	100kΩ 5% 0.1W
3075	3198 031 04720	4.7kΩ 5% 0402
3076	3198 031 06810	680Ω 5% 0.01W 0402
3077	3198 031 04720	4.7kΩ 5% 0402
3078	3198 031 04720	4.7kΩ 5% 0402
3079	3198 031 04720	4.7kΩ 5% 0402
3080	2322 704 61002	1kΩ 1%
3081	4822 117 13545	100Ω 1% 0402
3082	3198 031 04720	4.7kΩ 5% 0402
3083	3198 031 04720	4.7kΩ 5% 0402
3084	4822 117 13545	100Ω 1% 0402
3085	3198 031 04720	4.7kΩ 5% 0402
3086	4822 117 13602	2.2kΩ 5% 0.01W 0402
3087	4822 117 13606	10kΩ 5% 0.01W 0402
3088	3198 031 03320	3.3kΩ 5% 0402
3089	3198 031 01540	150kΩ 5% 0402
3091	4822 117 13545	100Ω 1% 0402
3092	3198 031 04720	4.7kΩ 5% 0402
3093	3198 031 04720	4.7kΩ 5% 0402
3094	3198 031 01090	10Ω 5% 0.01W 0402
3096	3198 031 03320	3.3kΩ 5% 0402
3097	3198 031 04720	4.7kΩ 5% 0402
3098	4822 117 13601	22kΩ 5% 0402
3302	4822 051 30101	100Ω 5% 0.062W
3303	4822 051 30101	100Ω 5% 0.062W
3304	4822 117 13606	10kΩ 5% 0.01W 0402
3305	4822 117 13606	10kΩ 5% 0.01W 0402
3309	4822 117 13606	10kΩ 5% 0.01W 0402
3311	4822 051 30103	10kΩ 5% 0.062W
3314	4822 117 13632	100kΩ 1% 0603 0.62W
3315	4822 051 30154	150kΩ 5% 0.062W
3316	4822 117 12968	820Ω 5% 0.62W
3317	4822 051 30561	560Ω 5% 0.062W
3319	4822 051 30273	27kΩ 5% 0.062W
3320	4822 051 30183	18kΩ 5% 0.062W

3321	4822 051 30222	2.2kΩ 5% 0.062W
3322	4822 051 30682	6.8Ω 5% 0.062W
3323	4822 051 30222	2.2kΩ 5% 0.062W
3327	4822 117 13548	1kΩ 5% 0402
3328	4822 117 13545	100Ω 1% 0402
3329	4822 117 13545	100Ω 1% 0402
3357	4822 117 13548	1kΩ 5% 0402
3358	4822 117 13545	100Ω 1% 0402
3359	3198 031 03910	390Ω 1% 0402
3370	3198 031 06810	680Ω 5% 0.01W 0402
3371	4822 117 13545	100Ω 1% 0402
3372	4822 117 13545	100Ω 1% 0402
3374	5322 117 11726	10Ω 5%
3378	4822 117 13545	100Ω 1% 0402
3380	4822 117 13606	10kΩ 5% 0.01W 0402
3381	4822 117 13606	10kΩ 5% 0.01W 0402
3382	4822 117 13606	10kΩ 5% 0.01W 0402
3383	4822 117 13606	10kΩ 5% 0.01W 0402
3386	4822 117 13545	100Ω 1% 0402
3389	4822 117 13545	100Ω 1% 0402
3390	4822 117 13545	100Ω 1% 0402
3391	4822 117 13545	100Ω 1% 0402
3392	4822 117 13545	100Ω 1% 0402
3393	4822 117 13545	100Ω 1% 0402
3394	3198 031 07590	75Ω 5% 0402
3401	3198 031 13390	33Ω
3402	3198 031 13390	33Ω
3403	3198 031 13390	33Ω
3404	3198 031 13390	33Ω
3405	3198 031 13390	33Ω
3406	3198 031 13390	33Ω
3407	3198 031 13390	33Ω
3408	3198 031 13390	33Ω
3409	3198 031 13390	33Ω
3410	3198 031 13390	33Ω
3411	3198 031 13390	33Ω
3412	3198 031 13390	33Ω
3413	3198 031 13390	33Ω
3414	3198 031 03390	33Ω 1% 0402
3422	3198 031 03390	33Ω 1% 0402
3423	3198 031 03320	3.3kΩ 5% 0402
3424	2322 704 61501	150Ω 1% 0603
3425	4822 117 13606	10kΩ 5% 0.01W 0402
3426	3198 031 03320	3.3kΩ 5% 0402
3432	4822 117 13606	10kΩ 5% 0.01W 0402
3433	4822 117 13606	10kΩ 5% 0.01W 0402
3434	4822 117 13606	10kΩ 5% 0.01W 0402
3436	4822 117 13606	10kΩ 5% 0.01W 0402
3437	4822 117 13606	10kΩ 5% 0.01W 0402
3438	3198 031 11030	10kΩ 5% 1206
3439	3198 031 11030	10kΩ 5% 1206
3440	3198 031 11030	10kΩ 5% 1206
3441	3198 031 11030	10kΩ 5% 1206
3442	3198 031 11030	10kΩ 5% 1206
3443	4822 117 13606	10kΩ 5% 0.01W 0402
3444	3198 031 04730	47Ω 5% 0402
3446	5322 117 13017	100Ω 1% 0.063W 0603
3447	3198 031 03390	33Ω 1% 0402
3448	3198 031 01090	10Ω 5% 0.01W 0402
3450	3198 031 04730	47Ω 5% 0402
3451	3198 031 04720	4.7kΩ 5% 0402
3452	3198 031 04720	4.7kΩ 5% 0402
3501	4822 117 13606	10kΩ 5% 0.01W 0402
3502	4822 117 13606	10kΩ 5% 0.01W 0402
3503	2322 704 61501	150Ω 1% 0603
3531	4822 117 13606	10kΩ 5% 0.01W 0402
3532	4822 117 13606	10kΩ 5% 0.01W 0402
3534	4822 117 13548	1kΩ 5% 0402
3536	4822 117 13606	10kΩ 5% 0.01W 0402
3538	3198 031 11030	10kΩ 5% 1206
3539	3198 031 11030	10kΩ 5% 1206
3540	3198 031 11030	10kΩ 5% 1206
3544	3198 031 11030	10kΩ 5% 1206
3545	3198 031 11030	10kΩ 5% 1206
3546	3198 031 11030	10kΩ 5% 1206
3547	3198 031 11030	10kΩ 5% 1206
3548	4822 117 13606	10kΩ 5% 0.01W 0402
3551	4822 051 30008	Jumper 0603
3560	4822 117 11297	100kΩ 5% 0.1W
3561	4822 117 11297	100kΩ 5% 0.1W
3562	4822 117 11297	100kΩ 5% 0.1W
3563	4822 117 13548	1kΩ 5% 0402
3564	4822 117 13548	1kΩ 5% 0402
3565	3198 031 01220	1.2kΩ 5% 0.01W 0402
3566	4822 117 13548	1kΩ 5% 0402
3605	4822 117 13545	100Ω 1% 0402
3606	4822 117 13545	100Ω 1% 0402
3607	4822 117 13545	100Ω 1% 0402
3608	4822 117 13545	100Ω 1% 0402
3609	4822 117 13545	100Ω 1% 0402
3610	4822 117 13601	22kΩ 5% 0402
3612	4822 117 13543	470Ω 5% 0402
3613	3198 031 02290	22Ω 5% 0.1W 0402
3614	3198 031 02290	22Ω 5% 0.1W 0402

3615	3198 031 02290	22Ω 5% 0.1W 0402
3616	3198 031 02290	22Ω 5% 0.1W 0402
3617	3198 031 02290	22Ω 5% 0.1W 0402
3618	3198 031 02290	22Ω 5% 0.1W 0402
3619	3198 031 08210	820Ω 5% 0,5W
3620	4822 117 13632	100kΩ 1% 0603 0.62W
3621	4822 117 13601	22kΩ 5% 0402
3622	4822 117 13601	22kΩ 5% 0402
3623	4822 117 13601	22kΩ 5% 0402
3624	4822 117 13601	22kΩ 5% 0402
3625	4822 117 13601	22kΩ 5% 0402
3626	4822 117 13601	22kΩ 5% 0402
3633	4822 117 13545	100Ω 1% 0402
3634	4822 117 13545	100Ω 1% 0402
3635	4822 117 13545	100Ω 1% 0402
3640	4822 117 13602	2.2kΩ 5% 0.01W 0402
3641	4822 117 13597	330Ω 5% 0402 0.01W
3642	4822 117 13597	330Ω 5% 0402 0.01W
3643	4822 117 13597	330Ω 5% 0402 0.01W
3644	4822 117 13597	330Ω 5% 0402 0.01W
3645	4822 117 13597	330Ω 5% 0402 0.01W
3646	4822 117 13597	330Ω 5% 0402 0.01W
3703	4822 117 13606	10kΩ 5% 0.01W 0402
3706	4822 117 13606	10kΩ 5% 0.01W 0402
3711	4822 117 13605	Jumper 0402
3712	4822 117 13606	10kΩ 5% 0.01W 0402
3714	3198 031 08220	8.2kΩ 5% 0.5W
3715	3198 031 01820	1.8kΩ 5% 0.01W 0402
3717	4822 117 13606	10kΩ 5% 0.01W 0402
3718	4822 117 13605	Jumper 0402
3719	4822 117 13606	10kΩ 5% 0.01W 0402
3722	3198 031 08220	8.2kΩ 5% 0.5W
3725	4822 117 13606	10kΩ 5% 0.01W 0402
3726	3198 031 08220	8.2kΩ 5% 0.5W
3727	3198 031 01820	1.8kΩ 5% 0.01W 0402
3730	4822 117 13606	10kΩ 5% 0.01W 0402
3731	4822 117 13543	470Ω 5% 0402
3732	4822 117 13548	1kΩ 5% 0402
3733	4822 117 13543	470Ω 5% 0402
3735	3198 031 02280	2.2Ω 5% 0.1W 0402
3736	3198 031 02280	2.2Ω 5% 0.1W 0402
3737	3198 031 02280	2.2Ω 5% 0.1W 0402
3738	3198 031 02280	2.2Ω 5% 0.1W 0402
3739	4822 117 13601	22kΩ 5% 0402
3740	4822 117 13601	22kΩ 5% 0402
3741	4822 117 11297	100kΩ 5% 0.1W
3742	4822 117 13601	22kΩ 5% 0402
3743	4822 117 13601	22kΩ 5% 0402
3744	4822 117 13606	10kΩ 5% 0.01W 0402
3745	4822 117 11297	100kΩ 5% 0.1W
3746	4822 117 11297	100kΩ 5% 0.1W
3747	4822 117 11297	100kΩ 5% 0.1W
3748	4822 117 13606	10kΩ 5% 0.01W 0402
3749	4822 117 13606	10kΩ 5% 0.01W 0402
3750	3198 031 06830	68kΩ 5% 0.01W 0402
3751	3198 031 06830	68kΩ 5% 0.01W 0402
3836	4822 117 13606	10kΩ 5% 0.01W 0402
3838	4822 117 13606	10kΩ 5% 0.01W 0402
3910	4822 117 13602	2.2kΩ 5% 0.01W 0402
3911	4822 117 13548	1kΩ 5% 0402
3930	4822 117 12917	1Ω 5% 0.062W
3931	4822 117 12917	1Ω 5% 0.062W
3932	2322 704 61002	1kΩ 1%
3933	2322 704 63302	3.3kΩ 1% 0603
3951	4822 117 12917	1Ω 5% 0.062W
3952	4822 117 12917	1Ω 5% 0.062W
3953	2322 704 61002	1kΩ 1%
3954	2322 704 63302	3.3kΩ 1% 0603
3955	4822 117 13606	10kΩ 5% 0.01W 0402
3958	3198 031 01530	15kΩ 5% 0.01W 0402
4xxx	4822 117 13605	Jumper 0402

5001	2422 536 00667	1mF 20%
5002	4822 157 11716	Bead 30Ω 100MHz
5003	4822 157 11716	Bead 30Ω at 100MHz
5004	4822 157 11716	Bead 30Ω at 100MHz
5005	4822 157 11716	Bead 30Ω at 100MHz
5006	4822 157 11716	Bead 30Ω at 100MHz
5007	4822 157 11716	Bead 30Ω at 100MHz
5008	4822 157 11716	Bead 30Ω at 100MHz
5010	3198 018 64790	47µH
5060	4822 157 11716	Bead 30Ω at 100MHz
5070	4822 157 11716	Bead 30Ω at 100MHz
5071	2422 549 42896	Bead 120Ω 100MHz
5072	2422 549 42896	Bead 120Ω 100MHz
5304	4822 157 11499	Bead 60Ω 100MHz
5309	3198 018 31290	12µH 10%
5321	3198 018 33970	0.39µH
5324	4822 157 71334	0.68µH
5370	4822 157 11716	Bead 30Ω at 100MHz
5371	4822 157 11716	Bead 30Ω at 100MHz
5372	2422 549 44197	Bead 220Ω at 100MHz
5530	2422 549 45333	Bead 120Ω 100MHz
5560	4822 157 11716	Bead 30Ω at 100MHz
5605	2422 549 45333	Bead 120Ω 100MHz
5607	2422 549 45333	Bead 120Ω 100MHz
5636	2422 549 45333	Bead 120Ω 100MHz
5646	2422 549 42896	Bead 120Ω 100MHz
5909	2422 549 45843	100MHZ
5910	2422 536 00667	1000µF 20% 7032
5920	2422 549 45333	Bead 120Ω 100MHz
5930	2422 535 94134	10µH 20% 0805
5931	2422 536 00689	220µH
5932	2422 535 94134	10µH 20% 0805
5952	2422 535 94134	10µH 20% 0805
5953	2422 536 00689	220µH
5954	2422 535 94134	10µH 20% 0805
5956	2422 549 45333	Bead 120Ω 100MHz
5958	2422 549 45333	Bead 120Ω 100MHz
5959	2422 549 45333	Bead 120Ω 100MHz
5984	2422 549 45333	Bead 120Ω 100MHz
5985	2422 549 45333	Bead 120Ω 100MHz
5986	2422 549 45333	Bead 120Ω 100MHz
5987	2422 549 45333	Bead 120Ω 100MHz
5988	2422 549 45333	Bead 120Ω 100MHz
5989	2422 549 45333	Bead 120Ω 100MHz
5990	2422 549 45333	Bead 120Ω 100MHz
5991	2422 549 45333	Bead 120Ω 100MHz
5994	2422 549 45333	Bead 120Ω 100MHz
5996	2422 549 45333	Bead 120Ω 100MHz
5997	2422 549 45333	Bead 120Ω 100MHz
5998	2422 549 45333	Bead 120Ω 100MHz

6001	4822 130 11397	BAS316
6002	4822 130 11397	BAS316
6005	9340 553 52115	BAS321
6020	4822 130 11397	BAS316
6021	4822 130 11397	BAS316
6073	4822 130 80622	BAT54
6076	4822 130 80622	BAT54
6310	4822 130 11397	BAS316
6323	4822 130 11525	1SS356
6328	4822 130 11416	PDZ6.8B
6329	4822 130 11416	PDZ6.8B
6563	9322 102 64685	UDZ2.7B
6564	4822 130 11416	PDZ6.8B
6604	4822 130 11397	BAS316
6605	4822 130 11397	BAS316
6634	9322 102 64685	UDZ2.7B
6635	9322 102 64685	UDZ2.7B
6640	9322 102 64685	UDZ2.7B
6910	5322 130 34337	BAV99
6911	9340 548 71115	PDZ33B
6930	9322 128 70685	SMSS14
6951	9322 128 70685	SMSS14

7001	9339 693 90135	BCP69-25
7002	9340 425 20115	BC847BS
7003	9339 693 90135	BCP69-25
7005	9340 547 13215	BSH103
7011	9352 747 88557	TDA12021H/N1B11
7012	3198 010 42310	BC847BW
7013	3198 010 42310	BC847BW
7014	3198 010 42310	BC847BW
7015	9322 208 05668	NE555D
7016	9322 208 05668	NE555D
7017	9322 208 05668	NE555D
7018	5322 130 60159	BC846B
7019	5322 130 60159	BC846B
7068	3198 010 42310	BC847BW
7070	9340 547 13215	BSH103
7099	4822 209 17226	M24C08-WMN6
7316	5322 130 42718	BFS20
7320	3198 010 42310	BC847BW
7370	9340 550 49115	PUMH7
7371	9340 550 49115	PUMH7
7372	9340 550 49115	PUMH7
7376	9340 425 10115	BC857BS
7377	9340 425 10115	BC857BS
7401	9322 206 86671	GM1501-BD
7449	3198 010 42310	BC847BW
7501	9322 199 17671	K4D263238M-QC50
7530	9322 205 12671	MX29LV040QC-70G
7531	9322 156 81668	M24C32-WMN6TNKSA
7532	9352 691 71115	NE56610-27GW
7560	9352 334 10118	TDA9178T/N1
7562	9322 199 24668	L7808CD2T
7563	4822 209 73852	PMBT2369
7604	9352 607 39118	74LVC14APW
7605	4822 209 60792	74HC4053D
7606	9322 199 56668	ADG781BCP
7607	9322 199 80668	SM5301BS-G
7640	4822 130 11155	PDTC114ET
7702	9340 425 20115	BC847BS
7703	9340 425 20115	BC847BS
7706	9351 742 70118	74HC08PW
7708	9340 550 49115	PUMH7
7709	9322 206 09668	TDA7297D
7710	3198 010 42310	BC847BW
7740	9322 183 05668	TS482ID
7910	4822 130 42804	BC817-25
7920	9322 163 24668	L78M08CDT
7930	5322 209 90529	MC34063AD
7952	5322 209 90529	MC34063AD
7954	9322 157 51685	SI12301DS
7955	4822 130 11155	PDTC114ET
7992	9322 142 88668	LF25CDT
7995	9322 189 19668	LD1086D2T18

Side AV/HP Panel [D]

Various

1301	2422 025 14531	20P Female
1302	2422 025 04854	6P Female
1306	2422 026 05059	Conector Phone
1307	4822 267 10484	YKF51-5359
8540	3139 131 03641	Cable 6P

2301	3198 017 41050	1µF 10V 0603
2302	4822 126 14241	330pF 0603 50V
2303	3198 017 41050	1µF 10V 0603
2304	4822 126 14241	330pF 0603 50V
2305	4822 126 14241	330pF 0603 50V
2306	4822 126 14241	330pF 0603 50V
2326	3198 017 41050	1µF 10V 0603

3301	4822 051 30331	330Ω 5% 0.062W
3302	4822 051 30339	33Ω 5% 0.062W
3303	4822 051 30221	220Ω 5% 0.062W
3304	4822 051 30223	22kΩ 5% 0.062W
3305	4822 117 12925	47kΩ 1% 0.063W 0603
3306	4822 051 30759	75Ω 5% 0.062W
3307	4822 051 30223	22kΩ 5% 0.062W
3308	4822 117 12925	47kΩ 1% 0.063W 0603
3316	4822 051 30339	33Ω 5% 0.062W
3318	4822 051 30151	150Ω 5% 0.062W
3319	4822 051 30391	390Ω 5% 0.062W
3320	4822 117 12903	1.8kΩ 1% 0.063W 0603
3321	4822 117 12968	820Ω 5% 0.62W
3322	4822 051 30008	Jumper 0603
3323	4822 051 30008	Jumper 0603
3325	4822 051 30759	75Ω 5% 0.062W
3326	4822 051 30102	1kΩ 5% 0.062W
3327	4822 117 13632	100kΩ 1% 0603 0.62W
3328	4822 051 30101	100Ω 5% 0.062W
3329	4822 051 30563	56kΩ 5% 0.062W
4xxx	4822 051 30008	Jumper 0603

6306	4822 130 11148	UDZ4.7B

7326	4822 130 60373	BC856B

IO Panel [H]

Various

1101	2422 025 14911	21p Female
1102	2422 025 14911	21p Female
1103	2422 025 18249	45P Female
1104	2422 025 14551	20P Female
1105	4822 267 31014	Socket headphone
1680	2422 033 00007	Socket DVI 24P
1687	2438 031 00416	Connector 15P Female
1688	4822 267 31014	Socket headphone
1698	2422 025 18249	45P Female
8103▲	3139 131 03511	FFC Foil 45P
8698▲	3139 131 03511	FFC Foil 45P

⊣⊢		
2101	4822 126 14241	330pF 0603 50V
2102	4822 124 23002	10µF 16V
2103	4822 126 14241	330pF 0603 50V
2104	3198 017 41050	1µF 10V 0603
2105	4822 126 14241	330pF 0603 50V
2106	4822 124 23002	10µF 16V
2107	4822 126 14241	330pF 0603 50V
2108	3198 017 41050	1µF 10V 0603
2109	4822 126 13881	470pF 5% 50V
2110	4822 126 13881	470pF 5% 50V
2111	4822 126 13881	470pF 5% 50V
2112	4822 126 13881	470pF 5% 50V
2119	3198 017 41050	1µF 10V 0603
2126	4822 124 23002	10µF 16V
2127	4822 126 14241	330pF 0603 50V
2128	2238 586 59812	100nF 20% 50V 0603
2129	4822 126 14241	330pF 0603 50V
2130	4822 124 23002	10µF 16V
2131	4822 126 14241	330pF 0603 50V
2132	2238 586 59812	100nF 20% 50V 0603
2133	4822 126 14241	330pF 0603 50V
2134	4822 126 13881	470pF 5% 50V
2135	4822 126 13881	470pF 5% 50V
2136	4822 126 13881	470pF 5% 50V
2137	4822 126 13881	470pF 5% 50V
2138	3198 017 41050	1µF 10V 0603
2147	4822 124 23002	10µF 16V
2148	4822 124 23002	10µF 16V
2152	4822 126 14241	330pF 0603 50V
2153	4822 126 14241	330pF 0603 50V
2155	4822 126 14241	330pF 0603 50V
2157	4822 126 14241	330pF 0603 50V
2169	4822 124 23002	10µF 16V
2683	3198 017 41050	1µF 10V 0603
2684	3198 017 41050	1µF 10V 0603
2687	3198 017 41050	1µF 10V 0603
2693	2238 586 59812	100nF 20% 50V 0603
2694	2238 586 59812	100nF 20% 50V 0603
2698	2020 552 94427	100pF 5% 50V
2699	2020 552 94427	100pF 5% 50V
2700	4822 126 14241	330pF 0603 50V
2701	4822 126 14241	330pF 0603 50V
2702	4822 126 14241	330pF 0603 50V
2703	4822 126 14241	330pF 0603 50V
2704	4822 126 14241	330pF 0603 50V
2705	4822 126 14241	330pF 0603 50V
⊣WW⊢		
3101	4822 051 30151	150Ω 5% 0.062W
3102	4822 117 12891	220kΩ 1%
3103	4822 051 30223	22kΩ 5% 0.062W
3104	4822 117 12925	47kΩ 1% 0.063W 0603
3105	4822 051 30151	150Ω 5% 0.062W
3106	4822 117 12891	220kΩ 1%
3107	4822 117 12925	47kΩ 1% 0.063W 0603
3108	4822 051 30223	22kΩ 5% 0.062W
3109	4822 051 30759	75Ω 5% 0.062W
3110	4822 051 30331	330Ω 5% 0.062W
3111	4822 051 30273	27kΩ 5% 0.062W
3112	4822 051 30682	6.8Ω 5% 0.062W
3113	4822 051 30759	75Ω 5% 0.062W
3114	4822 051 30331	330Ω 5% 0.062W
3115	4822 051 30759	75Ω 5% 0.062W
3116	4822 051 30331	330Ω 5% 0.062W
3117	4822 051 30331	330Ω 5% 0.062W
3118	4822 051 30759	75Ω 5% 0.062W
3119	4822 051 30689	68Ω 5% 0.063W 0603
3121	4822 051 30759	75Ω 5% 0.062W
3122	4822 051 30331	330Ω 5% 0.062W
3123	4822 051 30102	1kΩ 5% 0.062W
3124	4822 117 13632	100kΩ 1% 0603 0.62W
3125	4822 117 13632	100kΩ 1% 0603 0.62W
3126	4822 117 12891	220kΩ 1%
3127	4822 051 30151	150Ω 5% 0.062W
3128	4822 117 12925	47kΩ 1% 0.063W 0603
3129	4822 051 30223	22kΩ 5% 0.062W
3130	4822 117 12891	220kΩ 1%
3131	4822 051 30151	150Ω 5% 0.062W
3132	4822 117 12925	47kΩ 1% 0.063W 0603
3133	4822 051 30223	22kΩ 5% 0.062W
3134	4822 051 30682	6.8Ω 5% 0.062W
3135	4822 051 30273	27kΩ 5% 0.062W
3136	4822 051 30331	330Ω 5% 0.062W
3137	4822 051 30759	75Ω 5% 0.062W
3138	4822 117 13632	100kΩ 1% 0603 0.62W
3139	4822 117 13632	100kΩ 1% 0603 0.62W
3140	4822 051 30689	68Ω 5% 0.063W 0603
3141	4822 051 30102	1kΩ 5% 0.062W
3142	4822 051 30331	330Ω 5% 0.062W
3143	4822 051 30759	75Ω 5% 0.062W
3152	4822 117 12891	220kΩ 1%
3153	4822 051 30151	150Ω 5% 0.062W
3155	4822 117 12891	220kΩ 1%
3156	4822 051 30151	150Ω 5% 0.062W
3157	4822 051 30339	33Ω 5% 0.062W
3158	4822 051 30102	1kΩ 5% 0.062W
3169	4822 051 30479	47Ω 5% 0.062W
3681	4822 051 30008	Jumper 0603
3682	4822 051 30103	10kΩ 5% 0.062W
3683	4822 051 30759	75Ω 5% 0.062W
3684	4822 051 30759	75Ω 5% 0.062W
3686	4822 051 30008	Jumper 0603
3687	4822 051 30759	75Ω 5% 0.062W
3691	4822 051 30101	100Ω 5% 0.062W
3693	4822 051 30103	10kΩ 5% 0.062W
3694	4822 051 30103	10kΩ 5% 0.062W
3696	4822 051 30103	10kΩ 5% 0.062W
3697	4822 051 30103	10kΩ 5% 0.062W
3698	4822 051 30223	22kΩ 5% 0.062W
3699	4822 051 30223	22kΩ 5% 0.062W
3700	4822 117 12925	47kΩ 1% 0.063W 0603
3701	4822 117 12925	47kΩ 1% 0.063W 0603
3704	4822 051 30103	10kΩ 5% 0.062W
3705	4822 051 30103	10kΩ 5% 0.062W
3710	4822 051 30102	1kΩ 5% 0.062W
4106	4822 051 30008	Jumper 0603
⊣∿⊢		
5683	2422 549 45333	Bead 120Ω 100MHz
5684	2422 549 45333	Bead 120Ω 100MHz
5687	2422 549 45333	Bead 120Ω 100MHz
5692	2422 549 45333	Bead 120Ω 100MHz
⊣▶⊢		
6121	4822 130 11416	PDZ6.8B
6143	4822 130 11416	PDZ6.8B
6691	4822 130 11397	BAS316
6692	4822 130 11397	BAS316
⊲▭		
7119	5322 130 60159	BC846B
7138	5322 130 60159	BC846B
7693	9322 145 26668	M24C02-WMN6
7694	9322 145 26668	M24C02-WMN6

Front Interface + Keyboard [J]

Various

0041	3139 124 60061	Lens
8704	3139 131 03781	Cable 4P
⊣⊢		
2540	4822 124 41643	100µF 20% 16V
2541	3198 017 41050	1µF 10V 0603
⊣WW⊢		
3540	4822 051 30331	330Ω 5% 0.062W
3542	4822 051 30221	220Ω 5% 0.062W
3544	4822 051 30332	3.3Ω 5% 0.062W
3547	3198 021 32250	2.2MΩ 5% 0603
4540	4822 051 30008	Jumper 0603
4541	4822 051 30008	Jumper 0603
4542	4822 051 30008	Jumper 0603
⊣▶⊢		
6540	9322 192 35676	SPR-325MVW
⊲▭		
7540	4822 130 60373	BC856B
7541	5322 130 60159	BC846B
7542	5322 130 60159	BC846B
7543	9322 190 34682	BPW34

Pixel Plus Panel [PP]

Various

1001	2422 025 17192	Connector 9p m
1002	2422 025 18314	Connector 20p m v 1.25
1003	2422 025 18314	Connector 20p m v 1.25
1206	2422 549 45325	Bead 67Ω at 100MHz
1207	2422 549 45325	Bead 67Ω at 100MHz
1209	2422 549 45325	Bead 67Ω at 100MHz
1210	2422 549 45325	Bead 67Ω at 100MHz
1211	2422 549 45325	Bead 67Ω at 100MHz
1403	2422 549 45325	Bead 67Ω at 100MHz
1404	2422 549 45325	Bead 67Ω at 100MHz
1405	2422 549 45325	Bead 67Ω at 100MHz
1406	2422 549 45325	Bead 67Ω at 100MHz
1407	2422 549 45325	Bead 67Ω at 100MHz
⊣⊢		
2101	2020 552 94427	100pF 5% 50V
2102	2020 552 94427	100pF 5% 50V
2103	2020 552 94427	100pF 5% 50V
2104	2020 552 94427	100pF 5% 50V
2105	2238 586 59812	100nF 20% 50V 0603
2106	2020 552 94427	100pF 5% 50V
2107	2238 586 59812	100nF 20% 50V 0603
2108	2022 552 05614	1µF 10% 6V3 0603
2110	3198 016 31020	1nF 25V 0603
2112	2238 586 59812	100nF 20% 50V 0603
2113	2238 586 59812	100nF 20% 50V 0603
2114	2022 552 05682	2.2µF 10% 6.3V
2115	2238 586 59812	100nF 20% 50V 0603
2116	2022 552 05682	2.2µF 10% 6.3V
2121	2238 586 59812	100nF 20% 50V 0603
2122	2238 586 59812	100nF 20% 50V 0603
2123	2238 586 59812	100nF 20% 50V 0603
2124	2238 586 59812	100nF 20% 50V 0603
2130	2238 586 59812	100nF 20% 50V 0603
2131	2238 586 59812	100nF 20% 50V 0603
2132	2238 586 59812	100nF 20% 50V 0603
2133	2238 586 59812	100nF 20% 50V 0603
2134	2238 586 59812	100nF 20% 50V 0603
2135	2022 552 05682	2.2µF 10% 6.3V
2136	2238 586 59812	100nF 20% 50V 0603
2139	2238 586 59812	100nF 20% 50V 0603
2140	2238 586 59812	100nF 20% 50V 0603
2141	2238 586 59812	100nF 20% 50V 0603
2142	2238 586 59812	100nF 20% 50V 0603
2143	2238 586 59812	100nF 20% 50V 0603
2144	2238 586 59812	100nF 20% 50V 0603
2145	2238 586 59812	100nF 20% 50V 0603
2146	2238 586 59812	100nF 20% 50V 0603
2147	2238 586 59812	100nF 20% 50V 0603
2148	2238 586 59812	100nF 20% 50V 0603
2149	2238 586 59812	100nF 20% 50V 0603
2150	2238 586 59812	100nF 20% 50V 0603
2201	2238 586 59812	100nF 20% 50V 0603
2202	2238 586 59812	100nF 20% 50V 0603
2203	2238 586 59812	100nF 20% 50V 0603
2204	2238 586 59812	100nF 20% 50V 0603
2205	2238 586 59812	100nF 20% 50V 0603
2206	3198 016 31080	1pF 25% 50V 0603
2207	3198 016 31080	1pF 25% 50V 0603
2208	3198 016 31080	1pF 25% 50V 0603
2209	3198 016 31080	1pF 25% 50V 0603
2210	3198 016 31080	1pF 25% 50V 0603
2211	3198 016 31080	1pF 25% 50V 0603
2212	3198 016 31080	1pF 25% 50V 0603
2213	3198 016 31080	1pF 25% 50V 0603
2214	3198 016 31080	1pF 25% 50V 0603
2215	3198 016 31080	1pF 25% 50V 0603
2216	2238 586 59812	100nF 20% 50V 0603
2401	2238 586 59812	100nF 20% 50V 0603
2402	2238 586 59812	100nF 20% 50V 0603
2403	2238 586 59812	100nF 20% 50V 0603
2404	2238 586 59812	100nF 20% 50V 0603
2405	2238 586 59812	100nF 20% 50V 0603
2406	3198 016 31080	1pF 25% 50V 0603
2407	3198 016 31080	1pF 25% 50V 0603
2408	3198 016 31080	1pF 25% 50V 0603
2409	3198 016 31080	1pF 25% 50V 0603
2410	3198 016 31080	1pF 25% 50V 0603
2411	3198 016 31080	1pF 25% 50V 0603
2412	3198 016 31080	1pF 25% 50V 0603
2413	3198 016 31080	1pF 25% 50V 0603
2414	3198 016 31080	1pF 25% 50V 0603
2415	3198 016 31080	1pF 25% 50V 0603
2419	2238 586 59812	100nF 20% 50V 0603
2502	2238 586 59812	100nF 20% 50V 0603
2503	4822 124 12095	100µF 20% 16V
2504	2238 586 59812	100nF 20% 50V 0603
2505	2022 552 05682	2.2µF 10% 6.3V
2508	4822 122 33761	22pF 5% 50V
2509	4822 122 33761	22pF 5% 50V
2515	2238 586 59812	100nF 20% 50V 0603
2516	4822 122 33761	22pF 5% 50V
2520	4822 122 33761	22pF 5% 50V

2522	5322 126 11583	10nF 10% 50V 0603

3101	4822 051 30103	10kΩ 5% 0.062W
3102	4822 051 30479	47Ω 5% 0.062W
3103	4822 051 30479	47Ω 5% 0.062W
3104	4822 051 30103	10kΩ 5% 0.062W
3105	4822 051 30103	10kΩ 5% 0.062W
3106	4822 051 30103	10kΩ 5% 0.062W
3107	4822 051 30103	10kΩ 5% 0.062W
3108	4822 051 30103	10kΩ 5% 0.062W
3109	4822 051 30103	10kΩ 5% 0.062W
3110	4822 051 30479	47Ω 5% 0.062W
3111	4822 051 30103	10kΩ 5% 0.062W
3112	4822 051 30103	10kΩ 5% 0.062W
3113	4822 051 30103	10kΩ 5% 0.062W
3114	4822 051 30479	47Ω 5% 0.062W
3115	4822 051 30102	1kΩ 5% 0.062W
3116	4822 051 30333	33kΩ 5% 0.062W
3117	4822 051 30103	10kΩ 5% 0.062W
3118	4822 051 30333	33kΩ 5% 0.062W
3122	4822 051 30479	47Ω 5% 0.062W
3125	4822 051 30479	47Ω 5% 0.062W
3202	4822 051 30472	4.7Ω 5% 0.062W
3204	4822 051 30101	100Ω 5% 0.062W
3207	4822 051 30101	100Ω 5% 0.062W
3210	4822 051 30101	100Ω 5% 0.062W
3213	4822 051 30101	100Ω 5% 0.062W
3216	4822 051 30101	100Ω 5% 0.062W
3402	4822 051 30479	47Ω 5% 0.062W
3403	4822 051 30102	1kΩ 5% 0.062W
3406	4822 051 30472	4.7Ω 5% 0.062W
3407	4822 051 30101	100Ω 5% 0.062W
3421	4822 051 30479	47Ω 5% 0.062W
3510	4822 051 30472	4.7Ω 5% 0.062W
3512	4822 051 30103	10kΩ 5% 0.062W
3513	4822 051 30102	1kΩ 5% 0.062W
3515	4822 051 30472	4.7Ω 5% 0.062W
3519	4822 051 30472	4.7Ω 5% 0.062W
3520	4822 051 30472	4.7Ω 5% 0.062W

5101	4822 157 11716	Bead 30Ω at 100MHz
5104	4822 157 11716	Bead 30Ω at 100MHz
5105	4822 157 11716	Bead 30Ω at 100MHz
5106	4822 157 11716	Bead 30Ω at 100MHz
5107	4822 157 11716	Bead 30Ω at 100MHz
5201	4822 157 11716	Bead 30Ω at 100MHz
5202	4822 157 11716	Bead 30Ω at 100MHz
5203	4822 157 11716	Bead 30Ω at 100MHz
5401	4822 157 11716	Bead 30Ω at 100MHz
5402	4822 157 11716	Bead 30Ω at 100MHz
5403	4822 157 11716	Bead 30Ω at 100MHz

7101	9322 200 14671	EP1C12F256C8
7102	3122 357 00601	Softw. (See Prod.Surv.)
7108	2722 171 08825	Xtal 14.31818MHz 15pF SMD
7110	9340 425 20115	BC847BS
7201	9322 210 59668	THC63LVDF84B
7403	9322 201 03668	THC63LVDM83R
7501	9322 170 14668	LF15ABDT
7504	9322 190 77685	SI2307DS
7505	4822 130 11155	PDTC114ET

11. Revision List

Manual xxxx xxx xxxx.0
- First release.

Manual xxxx xxx xxxx.1
The manual is updated with information for models with Pixel Plus. This information is only applicable for xxPF9956 models.
- Chapter: Mechanical Instructions, added Pixel Plus Panel removal instructios.
- Chapter: Service Modes, Error Codes, and Fault Finding, some layout issues fixed.
- Chapter: Block Diagrams, Testpoint Overvies, and Waveforms: Pixel Plus Panel added.
- Chapter: Circuit Diagrams and PWB Layouts: Pixel Plus Panel added.
- Chapter: Circuit Descriptions, Abbreviations List, and IC Data Sheets: Pixel Plus Panel descriptions added.
- Chapter: Spare Parts list, Pixel Plus Panel added.